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NICKEL DERMATITIS.*

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During the past few years, while conducting a patch test clinic, Dr. Meara and I have been very impressed by the prevalence of contact dermatitis due to nickel sensitivity in women. This metal is by far the commonest sensitizing agent encountered in routine dermatological practice in London, and probably in the rest of England as well.

Incidence.

The numbers of positive patch test results found in our clinic are given in Table I.

Table I.—*Patch Test Clinic Results.*

	Total positives.	Nickel positives.
1953	478	131
1954	412	198
1955	420	180

Not all patients with suspected nickel sensitivity are patch-tested at this hospital, and these figures probably represent no more than half the number of cases which exist among the 18,000 to 20,000 new patients seen each year.

The present study has excluded men, and comprises 400 women patients. Over 95% of them had stocking suspender dermatitis as their first manifestation of nickel sensitivity. In only 19 out of 400 did the dermatitis begin

* Part of this paper was read at the British Association of Dermatology Annual Meeting at Birmingham in July 1955.

elsewhere than under the suspenders, and details of these initial sites are as follows :

Ear-rings	13
Wrist watch	3
Brassiere clips	1
Necklace clasp	1
Spectacle frame	1

Women may encounter nickel in a very wide range of metal objects to-day. Almost all plated articles have a coat of nickel applied before the final finish with chromium or other metal, and many alloys used for various purposes, from jewellery to instruments and coins, contain a small amount of nickel,

A dermatitis from suspenders is nearly always due to nickel sensitivity. Trauma and friction alone as a cause is very exceptional. This has been seen in only two or three cases and these patients had either a previous history of eczema or eczematous patches elsewhere. Sensitivity to rubber is another cause of dermatitis from suspenders, but is rare in comparison with nickel.

Clinical Features.

The general pattern of this dermatitis is now well-known ; it may be divided into

(*a*) The *primary* eruption, on direct metal-contact sites,

(*b*) the *secondary* eruption, or areas of spread, apart from metal-contact sites.

The *primary* sites are very numerous. Some of the metal objects which cause them are listed below :

Suspenders.	Hair grips.
Brassiere clips.	Zipp fasteners.
Ear-rings.	Brooches.
Necklace.	Spectacle frames.
Corsets.	Watches.
Scissors.	Bracelets.
Knitting needles.	Shoe buckles.
Pins.	Pram handles.

Not every contact site will react in the nickel sensitive patient. The posterior suspender sites react more frequently than the anterior ones, but one, two, three, or all four may be affected. One brassiere clip or one ear-ring but not the other may cause a patch. Patients may be able to wear many metal clips and fasteners and even suspenders without developing dermatitis. It is probable that this depends on the amount of nickel which is released from

the metal object, and which is presumably carried into the underlying skin via the sweat (Wells, 1956).

Some unusual cases have been seen : A woman had dermatitis of the lips from holding pins in her mouth ; another had itching of the scalp from hair grips (" bobby pins "), as well as from metal earphone holders. Wilson (1956) describes irritation of the lips from a metal lipstick holder.

The *secondary* sites are as follows :

(i) Elbow flexures.
(ii) Eyelids.
(iii) Sides of neck and face.
(iv) Thighs, inner aspect.
(v) Generalized.

This secondary eruption behaves like a haematogenous spread similar to the -ide phenomenon in ringworm and other infections. It is usually symmetrical, and is related to the activity of the primary site. Three out of four patients develop it. The relative incidence of the various sites is shown in Table II.

TABLE II.—*Incidence of the Secondary Eruption.*

Number of cases	312	
Secondary eruption in	232	74·4%
Elbow flexures	184	79·3%
Eyelids	61	26·4%
Sides of neck	59	25·4%
Inner thighs	5	2·1%
Generalized	11	4·7%

Some patients had more than one secondary site involved at the same time or at various times. It will be seen that suspender dermatitis causes a secondary spread more frequently (75% of cases) than any other type of eczema. The next commonest is varicose eczema—34% (Haxthausen, 1955).

Nickel sensitivity induced by metal contact at sites other than the suspenders does not appear to cause a secondary eruption as easily. Of 14 patients without thigh patches only 5 (35%) showed a secondary eruption, as opposed to the 75% mentioned above, but the numbers are too small to be conclusive. Cases of suspender dermatitis from rubber sensitivity do not develop this type of secondary spread.

Although most cases follow this general pattern, one sees exceptions and variations. Occasionally the secondary eruption on the arms may be unilateral, or it may affect the extensor surfaces of the elbows and forearms. In a few cases (4 cases in this series) the patients feel certain that the secondary eruption appeared before the primary sites. Wilson (1956) also has noted this.

Sometimes the secondary or -ide eruption is manifest in a non-eczematous

pattern, namely (i) erythema multiforme (2 cases), (ii) urticaria, (iii) generalized pruritus, and (iv) generalized prurigo.

The usual type of secondary eczematous eruption is often of more importance than the primary lesion for several reasons. First, the patients rarely present themselves to the doctor until they have a secondary eruption. Second, they do not associate the two eruptions, and as a result may not mention, or may even deny patches of dermatitis on the thigh. And third, the secondary eruption may recur from time to time independently of any obvious activity at the primary sites.

Patch Tests.

Nickel sensitivity can be confirmed in these patients by patch-testing with 1% or 2½% nickel sulphate solution; 5% or 10% solutions are unnecessarily strong and may give false positives. The appearances of the positive reactions are very variable. Usually they show the typical eczematous patch of grouped vesicles, but they may be almost entirely urticarial, and are sometimes pustular. Pustular reactions are often seen with stronger solutions and in atopic subjects (Sulzberger, 1940), but they also occur with 2½% solutions in the absence of atopic eczema. The solution often spreads under the plaster in an untidy way; this can be avoided by using soft paraffin as a diluent.

There has been much discussion of cross sensitivities with other metals (Haxthausen, 1936; Epstein, 1955). In this series 32 patients were tested with cobalt and of these 17 were positive; 22 patients were tested with copper, of whom three gave a positive result.

Some cases were also seen with additional sensitivity to chromate and mercury.

The allergy to nickel is almost certainly permanent; I have never seen a patient change from patch-test positive to negative.

Multiple contact sensitivity is not so very uncommon. The 19 cases of associated allergy seen amongst this series were as follows:

Rubber gloves (4).
Primula (2).
Lipstick (2).
Hair dye.
Quinine.
Anthisan.
Benadryl.
Streptomycin.
Antihistamine.
Shoes.
Face powder, lipstick, stockings.
Paraphenylenediamine.
Hair net elastic.
Rubber.

Aetiological Factors.

Age incidence is shown in Fig. 1. The youngest age of onset was 8 years. Initial development of sensitivity is fairly evenly distributed over the second, third, fourth and fifth decades, and it decreases markedly after the age of 50.

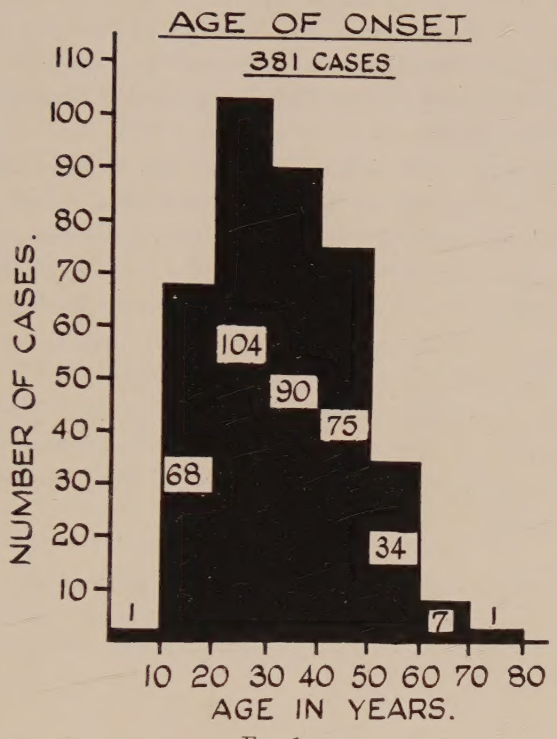
AGE OF ONSET
381 CASES
NUMBER OF CASES.
110
100
90
80
70
60
50
40
30
20
10
104
90
75
68
34
1
7
1
10 20 30 40 50 60 70 80
AGE IN YEARS.

FIG. 1.

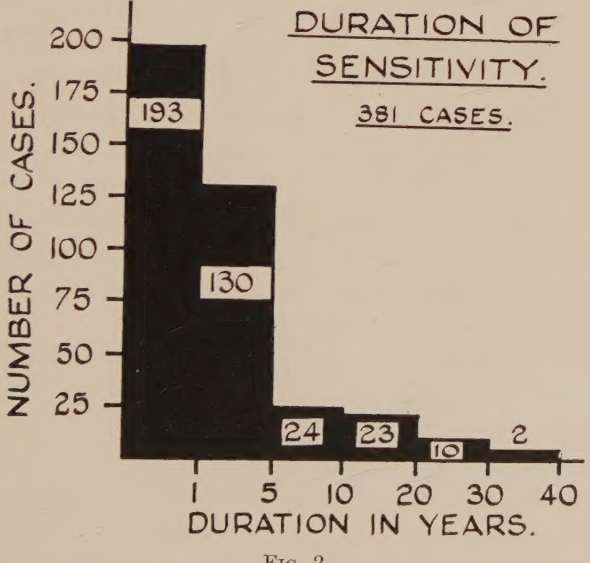
DURATION OF
SENSITIVITY.
381 CASES.
NUMBER OF CASES.
200
175
150
125
100
75
50
25
193
130
24
23
10
2
1 5 10 20 30 40
DURATION IN YEARS.

FIG. 2.

Duration of sensitivity has been estimated as accurately as possible and represented in Fig. 2. These figures tend to support the view that this allergy has become much more common over the past two decades, but it clearly existed at the time when Bloch and Jadassohn were originating their concept of specific contact dermatitis.

Friction and sweat may well be considered as factors in causing this type of dermatitis. They are difficult to assess. Presumably nickel ions pass from the metal into solution in sweat, in order to penetrate the epidermis (Wells, 1956). A thick thigh might be expected to suffer more frictional trauma than a slim one, but suspender dermatitis is by no means unusual in women with thin legs. I made an arbitrary assessment in 80 cases and found a normal-sized thigh in 52 (65%) and an obese thigh in 28 (35%).

Atopy is usually considered to be unrelated to contact allergy (Sulzberger, 1954; Wilson, 1955). A number of patients in this series were questioned about a personal and family history of eczema, asthma, and hay fever. The results are in Table III.

TABLE III.—*Personal and Family History of Atopy.*

Personal history	172 cases	27 positive, or 15% 145 negative, or 85%
Family history	175 cases	38 positive, or 22% 137 negative, or 78%

However in the whole series it is notable that only 4 patients (1%) had actually suffered from atopic eczema.

Psychological factors were not specifically examined in this study. There is an opinion that many of these patients develop neurodermatitis. Although both the primary and secondary areas may become lichenified and chronic, associated lichen simplex chronicus (Vidal) at other sites was seen in only a few cases. When a woman presents with chronic eczema of the elbow flexures together with a background of emotional stress and a family history of atopy, the disorder may readily be labelled neurodermatitis. Many of these patients, though not all, have or have had suspender dermatitis, and are nickel sensitive.

Psychic trauma sometimes, but not often, immediately precedes the onset of nickel sensitivity, and emotional disturbances may be associated with some relapses of the secondary eruption (Wilson, 1956).

Family history of the same trouble is quite rare. I found it in only 5 families among 400 patients.

The details of those affected were :

(*a*) Two sisters and grandmother.

(*b*) Mother and daughter (3 times).

(*c*) Aunt and cousin.

It is probable that such a finding is no more than coincidental.

Prognosis.

The natural history of this type of nickel dermatitis varies enormously. Patients with only primary sites affected settle down easily when the metal contacts are removed. Many such patients do not come to hospital at all. Once the secondary spread has occurred, however, the prognosis is not as good. Treated as out-patients they may take many weeks or months to clear up. Recently we have admitted a number of them to hospital, and recovery is very noticeably quicker. Part of the reason for this can be attributed to the absolute avoidance of nickel contacts, which is not easily achieved by an out-patient.

A high proportion of the patients develop recurrences. They may have long intervals of freedom although continuing to wear their metal suspenders, jewellery, and fasteners. It is difficult for women to find alternatives to all metal attachments on their clothing, especially suspenders, but this is not the only explanation of relapses. A notable feature is relapse of the secondary eruption without apparent activity at any of the primary sites. This recurrent dermatitis of the elbow flexures, face, neck, or eyelids may be very troublesome. It is the most intriguing aspect of the whole problem, but one can offer no explanation for it other than the inherent tendency of eczema to recur.

Associated Eczema.

Study of these patients has revealed a remarkably high proportion with other varieties of eczema in addition to their nickel sensitivity pattern. An attempt has been made to classify them in Table IV.

Table IV.—*Cases with Associated Eczema.*

Eczema of hands	81 = 20%
Seborrhoeic	13
Exogenous	12
Unclassified	10
Atopic	4
Nummular	3
Hypostatic	1
	124 = 31%

At first the association appeared no more than coincidental, but the figure of 31% is extremely high. In the vast majority of cases nickel dermatitis preceded any other lesion. The most important finding is the high incidence of eczema of the hands (20% of the 400 cases), though in only a few did direct metal contact appear to be the cause (scissors, taps, trombone). Hand eczemas are notoriously difficult to classify; since all the patients were women, four out of five were, not surprisingly, labelled housewife's dermatitis or unclassified;

the rest being made up of atopic, nummular, pompholyx, and occupational. Kroepfli and Schuppli (1954) suggested that household detergents contained traces of nickel, but Wells (1956) could find no evidence of this.

This aspect of the problem remains obscure, although suspender dermatitis appears to predispose the patients in some way to eczema elsewhere, especially on the hands.

Summary.

Allergic contact dermatitis to nickel induced by stocking suspenders in women is extremely common at present in England. It presents a characteristic pattern of secondary spread or eczematide which is described, and the recognition of which readily leads to the diagnosis of nickel sensitivity. In 400 cases three-quarters of the patients had this secondary eruption. An account is given of the clinical features and results of patch tests, and some of the aetiological features are discussed. A high proportion of the patients have an additional eczema not specifically related to the allergy, especially on the hands.

Acknowledgements.

Dr. B. M. Buck assisted in the early part of this study. Dr. R. H. Meara has given quite invaluable help in being associated with me throughout almost the whole period. Many of the physicians, registrars, and clinical assistants of St. John's Hospital for Diseases of the Skin allowed me to investigate their patients. I am extremely grateful to them all.

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EFFECTS OF NICKEL ON THE SKIN.

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In this country, the commonest cause of specific allergic contact dermatitis in women nowadays is nickel, and sensitivity has usually been induced at the stocking suspender sites. Realization of this has prompted some investigation of the relation between nickel and the skin, and the results of this are presented in three parts :

(i) Observations on the affinity of keratin for nickel.
(ii) Consideration of hand eczema in relation to nickel sensitivity.
(iii) Suggestions for the modification of stocking suspenders.

The Affinity of Keratin for Nickel.

If a section of skin is soaked in a dilute solution of a nickel salt and then rinsed, some nickel remains in the tissue and it can be seen under the microscope if a suitable colour reagent for nickel has been used. Of a number of colour reagents (Feigl, 1949) tried, dimethyl glyoxime and dithio-oxamide have proved useful.

Dimethyl glyoxime gives a bright pink inner complex salt which is stable, insoluble and highly specific for nickel, but its colour is rather pale in sections and it tends to form crystals. Dithio-oxamide gives a mauve to dark blue insoluble complex with nickel, and this is satisfactory under the microscope, though care is needed to distinguish interfering complexes such as the olive green one which copper forms with dithio-oxamide.

Method for showing Nickel Affinity.

A formalin fixed paraffin section of skin is hydrated and placed in 1% nickel sulphate for 15 minutes. It is then washed in copper-free tap water for 10 minutes. The section is flooded with 0·1% dithio-oxamide in 70% ethanol after which it is flooded with dilute ammonia solution.

A faint general colouring of the section may be seen, with some emphasis on nuclei, red cells, muscle fibres and kerato-hyalin granules. This general nickel " staining " or mordanting depends on the amount of washing and on the pH of the water or buffer used, as nickel is easily removed by acid rinses. There is in addition a much more consistent deeper colouring of the horny layer of ordinary skin, especially in its deeper part, and the inner root sheath of hairs is deeply coloured by the nickel complex (Fig. 1). No such nickel reaction is

seen in the mature keratin of hair cortex or in the surface scales of lip or tongue. The distribution of retained nickel in normal skin resembles that of certain acid dyes.

This distribution of retained nickel can be seen when nickel is applied after fixation as already described, or when fresh skin is placed in a nickel solution

FIG. 1.—Formalin-fixed section of guinea-pig skin treated with nickel sulphate followed by dithio-oxamide. The dark-coloured nickel complex is most evident in the surface keratin and in the inner root sheath of the hair follicles. × 125.

before fixation and sectioning. The same distribution can be seen after various fixatives, though it is enhanced by formalin.

The metal is taken up by certain keratins from great dilution. After soaking a skin section for a few hours in a solution of 1 part of nickel or copper per million of water, the colour of the metal-dithio-oxamide complex in the horny layer can be seen under the microscope.

Reaction of Nickel with Keratin.

Certain chemicals were applied to the skin sections before exposure to nickel and its colour reagent, in order to see whether any definite chemical group of the horny layer combined with the nickel. No change in nickel uptake and its subsequent visualization followed the following procedures :

(i) *Sulphydryl blockade* with iodoacetamide.

(ii) *Sulphydryl release* by reduction of disulphide groups with alkaline cyanide, sulphite or thioglycollate.

(iii) *Deamination* with Van Slyke's nitrous acid reagent.

(iv) *Benzoylation* with dry pyridine containing 10% benzoyl chloride (Pearse, 1953).

(v) Intensive *extraction of lipids* by the methods suggested by Pearse (1953).

On the other hand *esterification of acid radicals* by prolonged methylation (4 days at 37° C. in dry methanol containing 0·1 HCl (Lillie, 1954)) prevents the uptake of nickel by keratin. Furthermore, some return of the affinity of the horny layer for nickel was brought about by subsequent hydrolysis with N ammonia at 60° C. for 1 hour (Alexander and Hudson, 1954). This suggests that carboxyl groups may play a part in binding nickel, though the effect of methylation may not be altogether confined to carboxyl blocking (Fisher and Lillie, 1954).

Per-acids.—The cortex of hairs above the growth zone shows no affinity for nickel. Prior treatment with per-acetic or per-formic acid (Pearse, 1953), however, alters the hair cortex so that it then takes up nickel strongly. The keratin is altered by these per-acids in some way which is not understood (Findlay, 1955), but it is possible that carboxyl or cysteic acid groups may become available.

Patch Tests with Nickel.

If $2\frac{1}{2}\%$ or 1% nickel sulphate has been applied to normal skin for 2 days as a patch test, and if then a biopsy is made within a few days, ordinary fixation in formalin results in a false localization, as the nickel tends to shift during processing to areas of greatest affinity, such as have been described in the preceding paragraphs. If immediately after biopsy the fresh skin is placed in dithiooxamide for a few minutes and momentarily rendered alkaline, the nickel will be immobilized as a coloured complex, after which fixation in formalin and sectioning will produce no alteration of distribution. Sections will then show nickel held in scales at the surface of the horny layer, only penetrating deeper into the ends of the sweat ducts (Fig. 2), and sometimes down the hair-follicle lining.

If the uppermost layers of the epidermis have been damaged by a needle scratch, nickel will be seen to have reached the deeper layers of the surface keratin and the damaged region of the malpighian layer, where acute inflammation results.

Patch tests with nickel carried out on subjects of atopic eczema who were not sensitive to nickel often produced scattered pustules, as has been previously recorded by Sulzberger (1954) and by Wilson (1955). Biopsies of these patch tests showed that nickel had accumulated in the parakeratotic plugs at sweat-duct orifices, and had provoked an acute inflammatory reaction which took the form of an intraepidermal pustule related to the sweat duct.

Work so far suggests that nickel in contact with the skin surface tends to be held in the most superficial scales, though presumably some absorption takes place through the hair follicles. Nickel appears to penetrate deeper into the epidermis only at sweat-duct and hair-follicle openings ; but if the upper

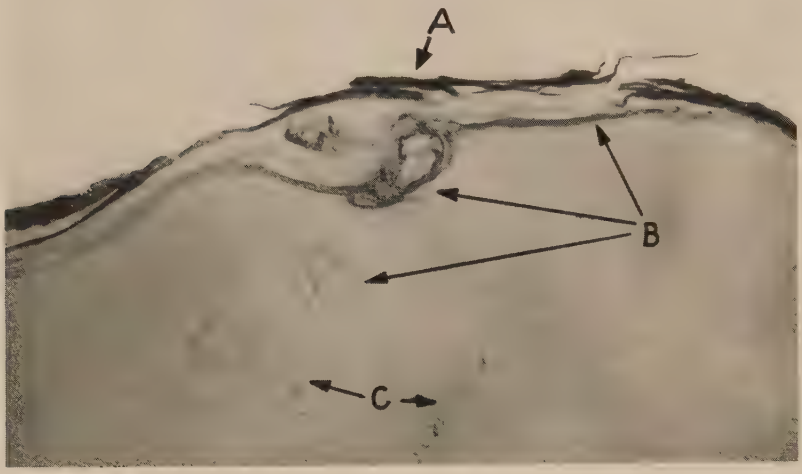

Fig. 2.—Biopsy made 2½ hours after removal of 48-hour patch test using 2½% nickel sulphate. The specimen was placed in dithio-oxamide before formalin fixation and sectioning. The nickel complex strongly colours the most superficial scales (A) and penetrates to deeper layers of keratin in and around the sweat duct orifices (B) (some melanin in basal cells (C) gives an indication of the deep boundary of the epidermis). × 600.

layers of keratin are breached nickel may be seen in the deeper keratin and in the damaged epithelium in which case an acute inflammatory reaction is the rule. Nothing is revealed about the mechanism of sensitization to nickel, but the striking affinity of certain keratins for nickel as well as for other metals and dyes is brought out.

Hand Eczema in Nickel-sensitive Patients.

Attention has been drawn to the high incidence of eczema of the hands (Calnan, 1956) in women who have become sensitized to nickel through their suspenders. This association was noted by Kroepfli and Schuppli (1955) who suggested that small amounts of nickel in detergents were sufficient to elicit nickel dermatitis of the hands. These authors found in certain detergent powders amounts of nickel and of chromate of the order of 10^{-4}. We therefore sent for spectrographic analysis samples of six detergent powders commonly used in this country. In none of these was any nickel found down to the limit

of sensitivity for the analytical method. That is, there was less than 10 parts of nickel per million of the detergent powder, if any (less than 10^{-5}). It is therefore unlikely that eczema of the hands is caused by nickel in detergents.

Brief handling of nickel-plated objects or of modern "silver" coins can hardly be avoided, but it seems unlikely that eczematous hand eruptions are thereby elicited at all commonly. Prolonged contact may certainly elicit local hand or finger eczema.

It is not difficult to demonstrate the release of nickel from alloy coins or from nickel plated objects. Each of three jars was filled with a solution roughly resembling sweat (containing NaCl $\frac{1}{2}\%$, urea $\frac{1}{2}\%$ and lactic acid $\frac{1}{4}\%$, pH 3 to 4). A modern sixpence was placed in one, a nickel-plated suspender tab in another, and the third was used as a control. After some days at room temperature, nickel could be demonstrated in the first two solutions by means of spot tests with dithio-oxamide and dimethyl glyoxime.

It is well known that a nickel-containing coin applied in the manner of a patch test to the back or forearm will produce a strong eczematous reaction in the nickel-sensitive patient. In two such patients we found that the minimum time of contact for a coin on the skin necessary to produce a positive contact reaction was between $\frac{1}{2}$ and 1 hour (the eczematous reaction appearing about 48 hours later).

Thus sweat may mobilize nickel and a coin may elicit nickel sensitivity after quite a short time of contact, but it is not known whether this is likely to be the cause of diffuse hand eczema. In most cases one is inclined to regard the hand involvement as a response to nonspecific irritants in subjects made more prone to eczema by their sensitivity to nickel.

The Modification of Stocking Suspenders.

Although nickel sensitivity is elicited by costume jewelry, brassiere clips, zips, spectacle frames, etc., it is rare in our experience for the nickel sensitivity to have been induced by anything other than the stocking suspender. Perhaps the pressure, sweating, friction and prolonged contact are favourable to sensitization. Many suspenders seem to allow an unnecessarily large area of contact between the nickel and the skin, and the problem seems sufficiently important to consider whether these humble articles of clothing might be improved. Contact with metal may be reduced by having a fabric backing to the suspender buckle or by covering the nickel parts with enamel; but with wear the enamel chips off and exposes the nickel plating, and fabric parts tend to become twisted or moist. For nickel-sensitive patients we have formerly recommended plastic suspenders, but these do not hold the stocking firmly enough and they are brittle. Manufacturers of stocking suspenders have been most sympathetic in considering the problem and they have now produced a

suspender buckle made entirely of nylon. This is very strong and seems to function perfectly, and we know that pure nylon never sensitizes. We are confident that the nylon buckle will suit the needs of the nickel sensitive patient, and if it were widely adopted, the incidence of nickel sensitization in women might be reduced.

Summary.

In vitro the horny layer of skin shows an affinity for metals such as nickel. This also applies to the inner root sheath of hairs, but not to hair cortex and not to mucosa.

Chemical tests suggest that carboxyl groups of keratin may play a part in retaining nickel.

Under conditions of patch-testing nickel tends to accumulate in surface scales, but may penetrate more deeply at sweat-duct and hair-follicle ostia, or at areas of surface damage.

No measurable amount of nickel was found in detergent powders.

For nickel-sensitive patients the use of suspender buckles made of nylon is suggested.

I wish to thank Dr. A. G. Everson Pearse for advice on histochemistry ; Dr. Frances Keddie for help with some experiments ; Mrs. E. Woods for technical assistance ; and Mr. R. J. Lunnon of the Institute of Dermatology for the photographs.

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OBSERVATIONS ON THE THIOL CONTENT OF ABNORMAL STRATUM CORNEUM IN PSORIASIS AND OTHER CONDITIONS.*

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Since the work of Buffa (1904) normal keratinization has been thought to involve, among other things, the oxidation of thiol groups (–SH) in cysteine residues of the malpighian layers into disulphide links (–SS–) in the horny structures. This view was based on the finding that with the reagents generally employed, nitroprusside or ferricyanide, –SH was demonstrable in the malpighian layers but not in the fully formed horn. Applying this to abnormal horn Percival and Stewart in 1930 showed that psoriatic scale gave a strongly positive reaction for –SH with the nitroprusside reagent. It might be concluded from this that the abnormality resulted from a failure of oxidation to –SS– during keratinization. More recently Zingsheim (1952) confirmed these results using quantitative methods and came to similar conclusions ; Van Scott and Flesch (1954) have also confirmed these findings quantitatively, using a more refined technique, though did not commit themselves as to how the abnormality arose.

Recently, by the use of newer histochemical techniques, it has, however, been shown that normal stratum corneum may contain some –SH groups though much less than the malpighian layers (Mescon and Flesch, 1952 ; Barnett and Seligman, 1954 ; Montagna, Eisen, Rademacher and Chase, 1954). Similar results have also been reported in quantitative estimations, normal horn generally yielding less –SH than abnormal. If first treated with denaturating agents such as ionic detergents, normal and abnormal horn both yield much larger concentrations of –SH (Van Scott and Lyon, 1953 ; Van Scott and Flesch, 1954). Evidently therefore the stratum corneum contains some free –SH, but much more can be demonstrated if the keratin is first altered or denatured. (It is assumed that denaturation unfolds or opens up a protein, and that this brings chemical groups of the molecule within reach of reagents to which they were previously inaccessible, or alters their reactivity in some way. Such groups in proteins that have their reactivity or accessibility altered by denaturation are sometimes called " masked " groups.) Further, some doubt has been thrown on the classical conception of normal keratinization as involving oxidation of –SH to –SS– by Van Scott and Flesch (1954) and by Flesch and Satanove (1955), who found somewhat similar values for –SS– links

* The preliminary results of this work were presented at the Annual Meeting of the British Association of Dermatology in June 1954.

in both malpighian and horny layers. This suggests that keratinization does not involve loss of –SH groups by oxidation to –SS–, but rather their apparent loss by becoming masked ; the –SS– of keratin on the other hand appears to be already present as such in the lower epidermal layers.

Considering abnormal horn, psoriatic scale for example, the question arises as to whether the relatively large content of free –SH present here could have arisen as a result of a partial failure of masking of these groups, or, if the classical view of keratinization is favoured, of a partial failure of oxidation to –SS– linkages.

The object of the present investigation was to confirm and enlarge the few quantitative observations already published on the problem of the –SH content of abnormal stratum corneum. Observations on the reactions of lauryl sulphate with metakeratin are also reported. These were made with a view to confirming the claim that this anionic detergent does not break –SS– links of keratin to form –SH. Van Scott and Flesch showed that it did not affect the –SS– links of cystine or insulin. Metakeratin would appear to be a suitable test substance for confirming this, being soluble, but probably closely related to native keratin, from which it is prepared. Its properties suggest that it contains –SS– links but no –SH groups (Goddard and Michaelis, 1935).

Experimental.

Materials.—Abnormal horn (scales) was collected from patients. Normal horn was obtained by scraping the skin of living subjects or fresh cadavers, by clipping callus from soles or palms, or by cutting 5–10 μ horizontal sections from plantar skin (obtained from amputated legs) with a freezing microtome.

The material from patients included scales from 29 cases of psoriasis, 11 of subacute or chronic eczematous conditions (including contact dermatitis, discoid eczema and eczema of unknown origin), 18 cases of chronic dermatitis of the legs (dermatoses showing psoriasiform scaling and of various aetiologies including infective, contact and gravitational factors), 3 of chronic discoid lupus erythematosus, 4 of exfoliative dermatitis (all of unknown or doubtful aetiology), 3 of infective or seborrhoeic dermatitis, 6 of pityriasis capitis, 1 of ichthyosis simplex, 1 of mycosis fungoides, 2 of lichen simplex chronicus, 1 of lichen planus, 1 of pemphigus foliaceus.

Metakeratin was prepared from keratin from human hair and from lambs' wool by the method of Goddard and Michaelis (1935).

Method.—A weighed amount of tissue was mechanically homogenized in glass-distilled water. Scrapings from normal stratum corneum were used unhomogenized, as the material obtained by scraping is already finely divided and extremely difficult to homogenize. Aliquots were then taken in duplicate for –SH estimation by the method of Flesch and Kun (1952). In this method

Bennett's reagent ("red sulphydryl reagent" or R.S.R., 1-(4-chloromercuriphenylazo)-2-naphthol) is used as a specific reagent for thiol groups, the estimation being performed colorimetrically. Glutathione (Hopkin & Williams) or cysteine HCl (B.D.H.) was used for preparing standard solutions. Where homogenates were treated with sodium lauryl sulphate (B.P.), this was made up as a 10% solution in the homogenate, and the mixture placed for 10 minutes in boiling water and cooled before –SH estimation. Glutathione and cysteine standards were also treated in the same way, but were not boiled. Sometimes lauryl sulphate appeared to interfere with the reaction between glutathione or cysteine and R.S.R.; where this occurred the results were rejected.

In some cases scales, after being ground in a mortar, were dried to constant weight in a desiccator at room temperature before thiol estimation. Fresh scales, under these conditions, lost from 12 to 17% of their initial weight.

As glutathione was in most cases used as the standard, the results of the protein –SH determinations have been expressed in terms of equivalence to mg. of glutathione.

Results.

Diagram 1 shows the values obtained for available –SH in aqueous homogenates of fresh scales from a number of dermatoses. It will be seen that psoriatic scales, although showing a considerable scatter of values, give the highest mean. Other high values are those of seborrhoeic dermatitis, pityriasis capitis and those designated chronic (psoriasiform) dermatitis of the leg. Two cases of lichen simplex chronicus and one of exfoliative dermatitis gave high values. All other conditions examined gave low values similar to normal stratum corneum or callus.

With a view to obtaining further information concerning the structure of these abnormal keratins, experiments were done involving denaturation of scales by heat, drying and treatment with lauryl sulphate. The scales of psoriasis and chronic (psoriasiform) dermatitis were used because they were easily available. Table I gives the results for available –SH in aqueous homogenates of normal and abnormal horny layer before and after they had been placed in a boiling water bath for 10 minutes. The mean –SH value for psoriatic scale was reduced to half by boiling, and that for chronic dermatitis was increased threefold. By contrast the effect of boiling on normal horn was slight, the changes being probably insignificant.

Table II shows the values for –SH in aqueous homogenates of fresh scales of psoriasis and chronic dermatitis, contrasted with homogenates in which the scales had been dried. Also given are the theoretical values expected in dried scales calculated from the result obtained for the fresh scales by allowing for water loss. Dried psoriatic scales gave in general lower values than expected,

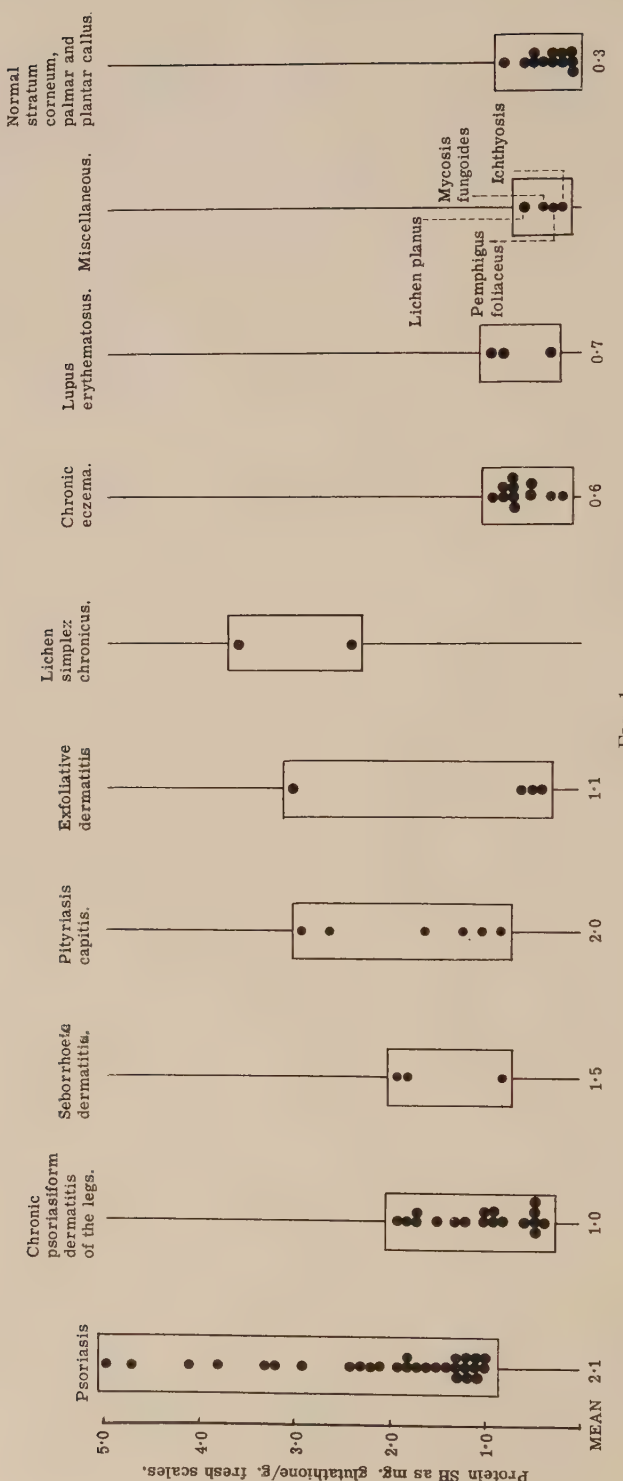
Protein SH as mg. glutathione/g. fresh scales.
5·0
4·0
3·0
2·0
1·0
MEAN
Psoriasis
2·1
Chronic psoriasiform dermatitis of the legs.
1·0
Seborrhoeic dermatitis.
1·5
Pityriasis capitis.
2·0
Exfoliative dermatitis
1·1
Lichen simplex chronicus.
Chronic eczema.
0·6
Lupus erythematosus.
0·7
Miscellaneous.
Lichen planus
Pemphigus foliaceus
Mycosis fungoides
Ichthyosis
Normal stratum corneum, palmar and plantar callus.
0·3

FIG. 1.

TABLE I.

Chronic dermatitis scale.		Psoriatic scale.		Callus (plantar).		Stratum corneum (forearm).	
Unboiled.	Boiled.	Unboiled.	Boiled.	Unboiled.	Boiled.	Unboiled.	Boiled.
0·4	2·4	5·0	1·2	0·2	0·1	0·5	0·2
0·5	0·7	1·6	0·6	0·3	0·2	0·2	0·1
0·5	2·0	4·2	3·6	0·4	0·4	0·2	0·2
0·5	2·2	1·2	0·9	—	—	0·3	0·4
0·8	2·1	3·3	0·7	Mean 0·3	0·2	—	—
1·2	2·6	1·4	0·8	—	—	Mean 0·3	0·2
0·9	2·3	2·3	1·4			—	—
0·5	1·1	2·1	1·3				
—	—	2·4	1·5				
Mean 0·6	1·9	2·2	0·8				
—	—	—	—				
		Mean 2·6	1·3				
		—	—				

The effect of boiling on thiol availability in homogenates of the scales of chronic (psoriasiform) dermatitis and psoriasis and of normal plantar callus and stratum corneum (scrapings from forearm). Results for protein –SH are expressed in terms of mg. of glutathione g. of fresh tissue.

TABLE II.

	Chronic dermatitis scale.			Psoriatic scale.		
	Fresh.	Dried.	Predicted value for dried scale.	Fresh.	Dried.	Predicted value for dried scale.
Aqueous homogenates	0·5	0·7	0·6	1·6	1·3	1·8
Same boiled	2·0	2·5	2·5	0·6	1·0	0·7
Aqueous homogenates	0·4	1·1	1·2	1·5	0·8	2·0
Same boiled	2·4	3·2	3·1	0·6	0·9	0·8
Aqueous homogenates	0·5	0·5	0·6	4·2	1·2	5·1
Same boiled	2·2	2·7	2·8	3·6	0·6	4·3
Aqueous homogenates	0·7	0·7	0·9	2·3	1·8	2·6
Same boiled	2·0	2·1	2·4	1·4	2·5	3·3

Thiol availability contrasted in fresh and dried scales. Estimation performed on unboiled and boiled homogenates. Results for protein –SH are expressed in terms of mg. glutathione g. of tissue.

but the scales of chronic dermatitis yielded results much more in agreement with the figures calculated. In the latter group this finding is more striking in scales that had been boiled. The lower values obtained for dried psoriatic scale compared with fresh were probably not caused by oxidation of –SH compounds of small molecular weight such as glutathione or cysteine, for experiments indicated that these can only be present in insignificant amounts. This was shown by assaying the –SH content of 10% trichloroacetic acid filtrates of psoriatic scale, which gave negligible values.

Table III shows the effect on the availability of –SH in homogenates after boiling for 10 minutes in 10% lauryl sulphate, contrasted with homogenates not so treated. The mean values in all homogenates after lauryl sulphate treatment show no statistically significant differences.

Table III.

Chronic dermatitis scales.		Psoriatic scales.		Callus (Palmar and plantar) and stratum corneum (forearm).	
Aqueous.	L.S.	Aqueous.	L.S.	Aqueous.	L.S.
0·5	4·1	2·3	7·1	0·4	3·7
1·0	8·4	1·4	3·4	0·6	4·3
0·9	5·0	5·0	10·0	0·5	5·7
0·5	3·2	2·1	6·5	0·1	8·1
0·8	7·3	2·4	7·6	0·1	8·6
1·2	9·4	1·1	14·2	0·3	9·0
1·5	4·4	1·0	6·3	0·1	10·6
1·0	10·0	1·5	2·5	0·3	17·3
0·9	2·3	3·3	5·8	0·2	13·1
0·5	3·2	1·0	6·3	0·5	2·9
0·6	7·9	1·8	5·3	—	—
—	—	—	—	Mean 0·3	Mean 8·3
Mean 0·9	Mean 5·9	Mean 2·1	Mean 6·8	—	—
—	—	—	—		S.D. = 4·51
	S.D. = 2·74		S.D. = 3·16		S.E. = 1·43
	S.E. = 0·83		S.E. = 0·95		

Thiol availability in scales of chronic (psoriasiform) dermatitis and psoriasis and in normal stratum corneum compared in aqueous homogenate (aqueous) and homogenate after boiling with 10% lauryl sulphate (L.S.). Results for protein –SH are expressed in terms of mg. glutathione/g. of fresh tissue.

Lastly, experiments on the effect of lauryl sulphate on metakeratin showed that when treated together in boiling water for periods up to 20 minutes no –SH could be demonstrated. If the views of Goddard and Michaelis are correct the inference is that lauryl sulphate does not rupture –SS– links to form –SH in metakeratin. This probably also applies to native keratin.

Discussion.

It has been shown that aqueous homogenates of the scales of psoriasis, chronic (psoriasiform) dermatitis of the legs, seborrhoeic dermatitis, lichen simplex chronicus, and in one case of idiopathic exfoliative dermatitis, gave higher yields of freely available –SH than did the scales from the other dermatoses examined, all of which gave values similar to normal stratum corneum. These findings are broadly in agreement with the results of the histochemical survey of Hollander, Sommers and Grimwade (1954). It is of interest to note also that the dermatoses with scales of high –SH content have several histological abnormalities in common, namely, parakeratosis, acanthosis with papillomatosis, and an upper dermal cellular infiltration. Admittedly they also often show distinguishing features, but Lever (1954) remarks that seborrhoeic dermatitis, lichen simplex and chronic dermatitis may all be histologically indistinguishable. Ormsby and Montgomery (1954) make a similar statement in regard to lichen simplex and psoriasis. The present findings appear to indicate biochemical similarities as well.

The results of the experiments concerned with denaturation of the scales of psoriasis and chronic (psoriasiform) dermatitis of the legs will now be considered. It must be emphasized that interpretations of the changes occuring in the structure of proteins during denaturation are by no means final (Anson, 1945), and the conclusions reached below must be regarded as provisional.

The effect of heat on proteins is generally recognized as producing two types of change; either denaturation, or else recoiling or aggregation may sometimes take place. Sometimes both changes appear to occur together. In denaturation it is thought that weak bonds, which may link adjacent polypeptide chains, are ruptured, but not disulphide linkages which, available evidence suggests, are unaffected by boiling at a pH near neutrality. Table I showed that the –SH of normal horny layer was little affected by boiling. This is in keeping with the view that normal keratins are relatively non-reactive and probably of rigid compact structure. In the scales of chronic dermatitis it was found that boiling considerably increased the availability of –SH. Here denaturation has occurred, linkages presumably being broken and molecular unfolding allowed to occur, exposing –SH that had before been masked. With psoriasis, on the other hand, –SH is decreased by boiling. This might be due to oxidation of these groups, but a possible alternative explanation is that the molecular structure was already partly opened up, and that heat has effected aggregation or a recoiling of polypeptide chains which results in partial masking of –SH.

The effect of drying proteins may be to denature them, the extent of disorganization depending on their stability and the conditions under which the water is extracted. It was shown (Table II) that dried scales of chronic dermatitis gave –SH values which could generally be predicted from the values obtained from the fresh scale, but that psoriatic scales gave values which were generally lower. This suggests that the keratins of chronic dermatitis are not unduly disturbed by water extraction and are therefore probably relatively stable. Psoriatic scales on the other hand appear to have suffered either oxidation of –SH, or a change resulting in masking of –SH possibly similar to that effected by boiling. Whichever explanation is correct, the inference is that psoriatic keratin is in a more unstable and disorganized state than that of chronic dermatitis.

Evaluation of the effects of detergents such as lauryl sulphate on keratins must be tentative, though much work has been done on other proteins in this field (Putnam, 1947; Lundgren, 1949). Lundgren (1945) suggested that these reagents denatured proteins by rupturing ionic bonds holding adjacent polypeptide chains together. In Table III it will be seen that the mean values for –SH in normal stratum corneum, psoriatic and chronic dermatitis scale show no statistically significant difference after lauryl sulphate treatment. The values obtained with lauryl sulphate presumably represent the total –SH content,

i.e. freely available *plus* masked groups. Also normal and abnormal horn are probably affected by lauryl sulphate in the same way, for when both are subjected to this reagent both give –SH values that are not statistically different. The high –SH content in *aqueous* homogenates prepared from the scales of patients with psoriasis and chronic psoriasiform dermatitis, as compared with the low content in normal horn, suggests that the keratins in these abnormal scales are partly "denatured". The results in Table III are not easily interpreted if the classical conception of keratinization is held and the higher free –SH of abnormal horn regarded as due to failure of transfer of –SH to –SS–. The results of these experiments cannot exclude such an event, but if it occurs it is probably only a contributory factor and of relative unimportance in the yield of free –SH.

Summary.

Previous observations on the availability of –SH in the scales of certain dermatoses have been extended. High values for freely available –SH were demonstrated in aqueous homogenates of the fresh scales of psoriasis, seborrhoeic dermatitis, chronic (psoriasiform) dermatitis of the legs and lichen simplex chronicus.

It is pointed out that all these conditions have histological features in common.

The scales of psoriasis and chronic (psoriasiform) dermatitis and normal stratum corneum were denatured by various agencies and the effects of these procedures noted on the availability of –SH.

A tentative interpretation of the data resulting is that the free –SH content in these two types of scale reflects a partial failure of masking. In the scale of chronic (psoriasiform) dermatitis the structural abnormality of the keratin appears to be less than that in psoriasis. The scales from these two dermatoses showed different chemical properties.

Acknowledgments

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EXTRAGENITAL FORMS OF CUTANEOUS BILHARZIASIS.

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Cutaneous bilharziasis of the perineum and of the external genital region is not uncommon. Indeed the presence of such lesions in tissues which lie not so far from the pelvic and mesenteric veins, the usual habitat of the bilharzial worms, is not surprising considering the possible anastomoses between the branches of the external superficial pudendal vein and those of the perineum.

It is not our object here to discuss or to record these perigenital cases which are well recognized. Lesions in aberrant situations have also been recorded, e.g. bilharziasis of the conjunctiva and bilharzial granuloma of the forearm, of the lips and other areas around the mouth.

In spite of the fact that at least 52% of the Egyptian population are said to have been infected by bilharzia, bilharzial lesions of the skin in areas away from the natural orifices are not suspected or diagnosed. The occurrence of cutaneous bilharziasis of the skin of the trunk was first recorded in 1941 by the author. The case was in a male aged 17 who was infected by *Schistosoma haematobium* in his urinary tract. The skin eruption consisted of groups of small firm rounded or oval papules the same colour as the skin or a little darker and without redness. The papules were irregularly distributed and remained solitary in certain areas and grouped in others. The eruption was exclusively on the skin of the back from the region of the scapulae to the waist. The lesions reached a maximum size of 3–4 mm. in diameter and then remained stationary, and appeared in successive crops. Clinically it simulated tuberculide to a great degree. The bilharzial nature was not suspected clinically in this case ; the diagnosis was made by biopsy, bilharzial ova being found in groups amidst a bilharzial reaction immediately under the epidermis. This case was demonstrated at a clinical meeting at Kasr el Aini Hospital.

Two further cases of this rare cutaneous bilharziasis of aberrant sites are now recorded :

Case Report.

Case 1.—A boy aged 11 years presented an irregular nodular mass adjacent to the umbilicus measuring 2 by 2·5 cm. The mass was covered by intact skin. The outline of its base was an irregular oval. It was painless and firm in consistency and of mulberry appearance. Firm papules made a part of its surface. The mass was surrounded by a group of similar papules matted together, making a sessile lesion. A few firm oval and rounded papules not accompanied by erythema were found irregularly

distributed around the main mass. The skin was otherwise normal. The papules were reminiscent of the bilharzial lesion of the earlier case mentioned above, and a clinical diagnosis of bilharzioma of the abdominal wall was made. The firm consistence, the absence of redness and the preservation of both colour and surface of the skin helped to differentiate it from other granulomata of the skin, including aberrant leishmaniasis.

The liver and spleen were not enlarged and the heart was normal with no clinical or radiological evidence of congenital abnormality. No thickened urachus was felt and no collateral anastomotic veins were seen. There was no abnormality of other systems of the body on thorough clinical examination kindly carried out by Dr. A. H. Mousa. The urine showed living *Bilharzia haematobium* ova and some red blood cells. The faeces were free from cysts, parasites and ova. The blood showed mild secondary anaemia with relative eosinophilia (12%).

The histological examination (Prof. Hashem) revealed the presence of bilharzia ova and bilharzial granulomatous reaction under the epidermis occupying the corium and subcutaneous tissue. The epidermis shows little or no reaction. The dermis and subdermis is the seat of a diffuse bilharzial infiltration and bilharzial granulation tissue with multiple eosinophilic abscesses surrounded by degenerating bilharzia ova. The bilharzial granulation tissue is found partly as conglomerate bilharzial follicles containing ova and surrounded by endothelioid cells and concentric layers of fibrous tissue, and partly as diffuse bilharzial granulation tissue. The eosinophilic abscesses consist of a massive eosinophilic infiltrate with central necrosis. Among the eosinophil cells at the periphery there are several bilharzial ova in various stages of degeneration.

Treatment.—A course of tartar emetic was given, by the end of which the individual small papules had entirely disappeared and the large mass was reduced to nearly one half of its size. After two months' rest during which the mass further reduced in size, the patient was given another course of tartar emetic as his urine continued to show bilharzia ova. The mass and all the lesions had disappeared completely after the lapse of five months since the onset of treatment, and were replaced by fine thin depressed scars.

Case 2.—A boy 12 years of age occupied as a village hawker. Thirty days after suprapubic cystostomy carried out for traumatic rupture of urethra a painless skin eruption began to appear on the lower part of the abdominal wall. The eruption was bilaterally distributed and extended down to the suprapubic area nearly to the root of the penis, laterally to the inguinal areas more to the right side and down to the outer part of the right thigh (Fig. 1). On the abdominal wall the left side was affected to a greater extent. A few isolated firm papules 2–3 mm. in diameter and ovoid in shape were scattered reaching the umbilicus and a little above it. Grouping of the lesions was a marked characteristic. The skin immediately around the abdominal incision was also involved but not as heavily as the surrounding areas. The older lesions showed agglomeration of the papules forming variously-sized nodules and raised plaques in which individual papules could be distinguished. The surface of some of them was eroded. Fresh lesions presented as individual isolated little firm skin-coloured papules of an indolent nature. These papules represent the primary lesions of bilharzial affection of the skin. The skin of the scrotum and penis was normal. The eruption was symptomless. The lesions at first sight looked rather like a granuloma of unusual character, such as bromoderma or pyoderma vegetans, but the absence of erythema and pustulation was against such diagnoses.

The clinical diagnosis of bilharziasis of the abdominal wall was verified by the pathological examination.

General examination of the patient showed no enlargement of the liver or spleen. There were no collateral veins apparent in the abdominal wall. The heart was normal under clinical and radiological examination. Urine was dribbling from the urethra

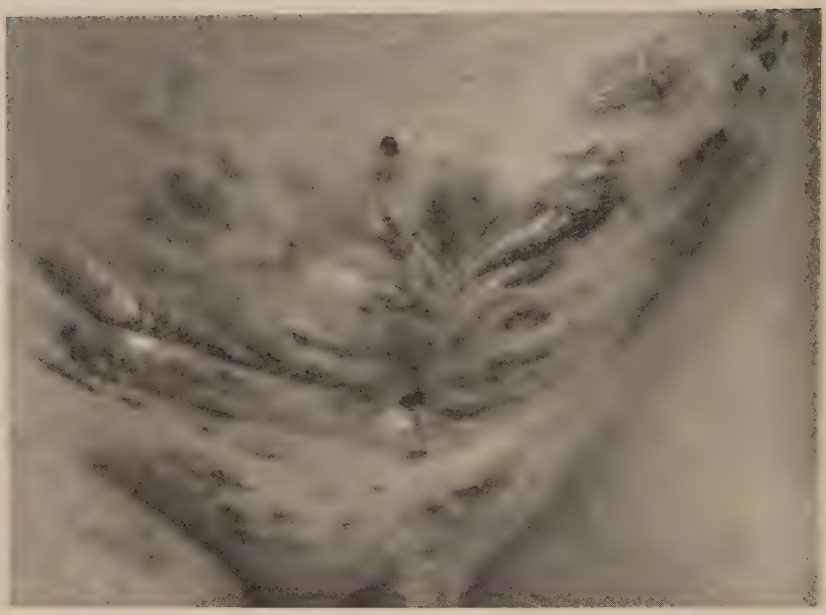

Fig. 1.

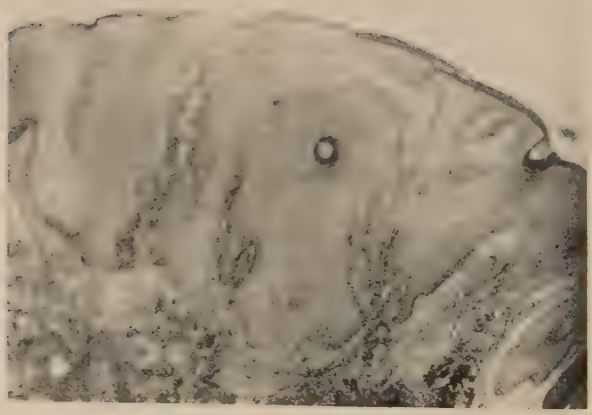

Fig. 2.

and constantly overflowing from the suprapubic cystostomy. The blood count showed mild secondary anaemia with mild leucocytosis and relative eosinophilia (15%). The urine showed the presence of living *Bilharzia haematobium* ova, erythrocytes, and many pus cells.

The patient was given a tartar-emetic course. At the end of the course very little change in the lesions was observed. Forty-five days later a similar course was given after which the general condition of the patient improved. The skin lesions slowly regressed and entirely disappeared at the end of five months, leaving behind pigmented and depigmented patches and superficial thin scars.

Histology (Dr. Fatma Abdeen).—The dermis and subcutaneous tissues show heavy infiltration by bilharzia ova apparently of haematobium type. The ova are fresh, degenerate or calcified. They are surrounded by typical bilharzial tubercles in certain areas and by diffuse bilharzial granulation tissue in other areas (Fig. 2). Eosinophils are numerous and in certain parts are collections of a large number of cells making a sort of eosinophilic abscess. Sometimes the ova are present just under the epidermis, which is, however, intact except at one small area, where it is ulcerated. Just under the ulcer there are a large number of ova surrounded by heavy eosinophilic reaction simulating an abscess which is going to burst. In some sections the epidermis shows marked acanthosis with pseudo-epitheliomatous hyperplasia of the benign type. In one specimen ova, single and in groups, are present in the epidermis amongst the epithelial cells.

Discussion.

The three cases mentioned have in common certain interesting features :

(i) The bilharzial infection was relatively recent and, like other aberrant bilharziasis, was exclusively haematobium and occurred in young adults and children.

(ii) The site affected was always the trunk and not around the natural orifices.

(iii) The primary lesion was always a firm papule of the same colour as the skin without erythema, reaching a size of 2–3 mm., ovoid in shape and firm in consistency. The papules were partly embedded in the skin and partly projected above it. A further step in development is the agglomeration of these papules to form slightly raised plaques of irregular contours. Later still, some of the plaques develop into nodules of mammillated surface and deeper colour, and of irregular ovoid contour. The skin over old nodules may appear deeply pigmented, scaly and slightly abraded and may later ulcerate.

(iv) There was neither pustule formation nor pustulation of any of the papules. The lesions were always symptomless from beginning to end.

(v) The lesions were not accompanied by the development of subcutaneous masses or infiltrations.

(vi) The lesions took 1–2 months to develop from papules to nodules.

(vii) The lesions showed slow disappearance under treatment to disappear completely in about 5 months.

These data are enough to make easy the clinical diagnosis of cutaneous bilharziasis.

Pathogenesis of Aberrant Bilharziasis.

Broadly speaking we can meet bilharziasis of the skin in three forms : First the stage of invasion in which cercariae invade the skin. Second, a septicaemic or rather parasitaemic phase in which the cercariae are disseminated to the tissues of the body including the skin ; those reaching the portal circulation survive, the rest are destroyed. Third, the stage in which granulomata are developed in the skin near the natural orifices or in aberrant situations, in response to the irritation of bilharzia ova deposited there. It is unusual for bilharzia ova to be carried far away from the natural outlets, and it is therefore unusual to find granulomata except in those regions. Thus, the bilharzial granulomatous reaction in response to the deposition of the ova or even worms has been found in tissues of the perineum, scrotum and its vicinity due to the passage of ova or of the immature worms along venous anastomoses between the pelvic and the mesenteric veins (the home of the bilharzia worms). Ova can also pass through abnormal anastomotic venous connections that may be formed between the systemic and portal circulation. In a similar way the ova were deposited in the abdominal wall around the suprapubic cystostomy scar in our third case through venous anastomosis between the vesical plexus of veins and those of the abdominal wall as a sequel to the operation. It also explains the bilharzial granulomata described by Prof. Madden (1904) in the rectus muscle.

This mechanism cannot explain the presence of ova in distant areas such as the skin of the back or the forearm or other sites such as the orbital structures or the brain.

The *Schistosoma haematobium* ova passing to their natural drain are directed centrifugally to the bladder to pass in the urine. Any haematobium ova passing into the blood stream and reaching the general circulation are trapped by the fine arterioles of the lung since the size of the ovum is 75 μ, larger than the lumen of the alveolar capillaries. This sort of pulmonary sieve prevents the frequent arterial dissemination of the ova. However, it is probable that under certain conditions in which there is obstruction of the alveolar capillaries, the arteriovenous anastomotic mechanism in the pulmonary circulation is accentuated, thus allowing the ova to pass this efficient filter and to reach the systemic circulation and appear in aberrant situations. Not only ova but also actual bilharzial worms can pass through the arteriovenous anastomatic channels and can be traced in aberrant situations, such as the thyroid and coronary vessels. It has been proved experimentally that beads of 500 μ diameter injected into the pulmonary artery can be received into the pulmonary vein, passing through the arteriovenous anastomotic channels in the lungs and from the pulmonary veins to the left side of the heart. Needless to say this happens with extreme rarity.

Summary.

Three cases of cutaneous bilharziasis in sites remote from the natural orifices have been described.

The primary reaction of the skin to the presence of ova by which the bilharzial primary lesion is suspected and diagnosed is described.

The speed of evolution of the lesion from a papule to a fully developed granuloma is roughly worked out, and the time necessary for involution under treatment is defined.

A possible explanation is given of how bilharzia ova or even worms can be found in aberrant situations.

The histopathological picture of cutaneous bilharziasis is described.

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THE USE OF CORTISONE IN LICHEN PLANUS.

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AND

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Lichen planus, a well-defined clinical and dermatological entity, is usually unresponsive to treatment. As in many disturbances of unknown aetiology, therapeutic approaches have been protean, and many have been discarded. Arsenicals and salicylates have lost popularity; lumbar puncture and irradiation remain of unproved value; and mercury retains an established claim without impressive success.

The disease is fortunately self-limiting, except in its hypertrophic and verrucose forms, but persistence over months or years is not rare. The physical discomfort is often severe and debilitating. The physician is helpless and rarely relieves his unhappy patient. A therapeutic agent giving symptomatic help in lichen planus warrants careful investigation.

In cortisone and ACTH remedies have been found for a number of hitherto uncontrollable disturbances of the skin, e.g. pemphigus and exfoliative erythroderma, but references to the use of these agents in lichen planus and its variants are few. Hopkins *et al.* (1952) obtained a temporary remission in one patient with lichen planus treated with cortisone, but the condition relapsed after four months. Sulzberger and Baer (1954) note that of nine patients treated with cortisone, three responded promptly and in the remainder itching ceased without visible change. Meara (1955) reported good results in the treatment of lichen planus in ten patients by giving ACTH by intravenous drip. His patients had widespread and irritable eruptions. In every case symptoms were rapidly controlled, the eruption subsiding in 14–28 days. Three of his patients quickly relapsed. Meara concluded that there was a place for ACTH in the treatment of those patients whose symptoms were distressing and disabling. Kristjansen and Reymann (1953) reported favourable results in ten cases of lichen planus treated with intramuscular ACTH. They emphasized, however, that, because of the hazards of complications, the drug should be given only to those who showed no response to more orthodox methods of treatment.

The use of ACTH by intravenous drip necessitates admission to hospital, and even if administered intramuscularly a daily injection is inconvenient. Oral cortisone has allied potentialities and can be given to the out-patient.

The writers originally carried out an uncontrolled trial with oral cortisone in 21 cases of lichen planus. In general the patients were those manifesting acute and generalized disturbances with much irritation. Ten patients were greatly relieved and improved, an encouraging finding. This investigation was not controlled and no standardized dosage was used in the absence of any experience with the drug as applied to this disease. Treatment lasted for an average of four weeks. There was no clear relationship between dosage and response: two patients who responded well received only 0·7 g. of cortisone, but two others who did not show any significant improvement had received 3·5 g. and 3·15 g. respectively. The degree of response did not seem to diminish as further cases were treated. A more thorough trial was instituted.

In this second group 20 patients (12 men, 8 women) were treated. The patients selected were those with disseminated lichen planus with much irritation and were not a consecutive series of cases of lichen planus of all forms. The duration of the disease before initiation of treatment was variable (ten months to two weeks).

Ten patients were given cortisone by mouth, and ten, as controls, were given dummy tablets, indistinguishable from the active ones. The sequence in which they were dispensed was based on a random series of numbers from one to twenty. The pharmacist alone had records as to which tablets had been given and his data were divulged only on the completion of the trial. Those assessing response had no knowledge as to the allocation of active or dummy tablets. A standardized dosage was employed: 150 mg. (6 tabs.) daily for two weeks, followed by 75 mg. (3 tabs.) daily for a further two weeks. Patients were instructed to take the tablets in divided doses three times daily. This dosage scheme was adhered to for all cases except two: In one of these the treatment was discontinued at the end of the first fortnight because the patient had recovered: in the other it was withdrawn because the patient had become so much worse.

No other treatment was given during the period of the trial. Extra potassium was not administered, since it was not known which patients received active cortisone.

All patients, at the first visit, were questioned as to personal and family histories of chest disease, peptic ulceration, diabetes and psychoneurosis. Blood pressures were taken and urine tested. They were seen at fortnightly intervals during the month of the trial, and for some weeks thereafter.

Results.

Results were classified as follows:

Good: Relief of itching, with browning and fading of the lesions apparent during the first 14 days, and advanced at four weeks.

Fair : Itching relieved, but only moderate fading of lesions at the end of a month.

Poor : No response or deterioration.

After completion of the trial, the assessment was as follows :

Active tablets (10 cases) : Good—6, Fair—4, Poor—0,

Dummy tablets (10 cases) : Good—1, Fair—2, Poor—7.

Two patients showed clinical deterioration during treatment. One after two weeks became erythrodermatous ; the other, after four weeks, developed an apparent lichen planus pemphigoides. Both were found later to have been receiving dummy tablets.

Tendency to relapse after initial success was evident. A further survey three months later showed that of the active tablet group half relapsed within a month. Repetition of treatment again gave a 50% clearance.

Generally speaking there was an undoubted tendency to greater response in those patients whose disease had been present for several months than in those who had been affected for shorter periods.

It will be questioned whether there is any justification for using a measure which contains so many hazards in the treatment of a condition like lichen planus, which is self-limiting, and in its essentials a benign disorder. Furthermore, it seems apparent that the pattern of response of lichen planus to cortisone is the same as that obtained in other disorders treated with this substance ; it merely suppresses symptoms and appears to have no effect on the underlying mechanism of the disease. However, our contention is that the great irritation and distress which sometimes occur are adequate grounds for the use of cortisone in selected cases, since the temporary results are, in general, good. There is a notable tendency for the disease to relapse on cessation of treatment, but the drug may be of value in tiding a patient over an acute and distressing phase of the malady.

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POLYMORPHIC LIGHT ERUPTIONS: RELATION TO ULTRAVIOLET LIGHT INTENSITY AND HOURS OF SUNSHINE.

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At wavelengths ranging from 2500 Å to 4000 Å, ultraviolet rays are known to penetrate the skin to depths increasing with the wavelengths. As a result of skin absorption, the percentage of penetration at a depth of 0·5 mm. will be about 5 (Hasselbach, 1911). Only absorbed rays can produce biological effects. Wavelengths which can provoke polymorphic light eruptions were first determined by Haxthausen (1919) and were later subjected to more detailed studies by Schaumann and Lindholm (1932) who demonstrated that only wavelengths around 3022 Å can produce polymorphic light eruptions.

The purpose of the present study was to see whether a correlation could be demonstrated clinically between polymorphic light eruptions and light intensity.

Since January 1955 we followed the course of polymorphic light eruptions in 58 patients who were treated prophylactically or curatively with chloroquine diphosphate. The average age of the patients (42 women and 16 men) was 43 years and the average duration of the disorder was 15 years. Data for the first eruption this year and aggravations, if any (i.e. a new typical eruption after a healthy period), were registered from case histories and by personal observations during or after treatment.

The weekly hours of sunshine for the City of Copenhagen were measured with Campbell-Stokes's sunshine recorder.* The intensity of ultraviolet light in the range from 3000 to 4000 Å was determined photometrically for direct radiation. The results were recorded in arbitrary units and the values were totalled for weeks corresponding to the records of sunshine hours.†

Forty patients showed the eruption for the first time; 45 aggravations were observed in 29 patients during treatment; and relapses occurred in 11 patients between one and seven weeks after discontinuation of the treatment. The outbreaks occurred mainly during five periods: 2nd-3rd week, 8th-9th week, 14th–18th week, 20th 23rd week, and 26th–28th week. Snow fell during the first two weeks and the ground was white with snow, which strongly reflected the ultraviolet rays.

* Data kindly supplied by the Meteorological Institute of Denmark, Climatologic Department, Copenhagen.

† Data kindly supplied by J. Ebbesen, M.D., of the Finsen Institute, Medical Department Copenhagen.

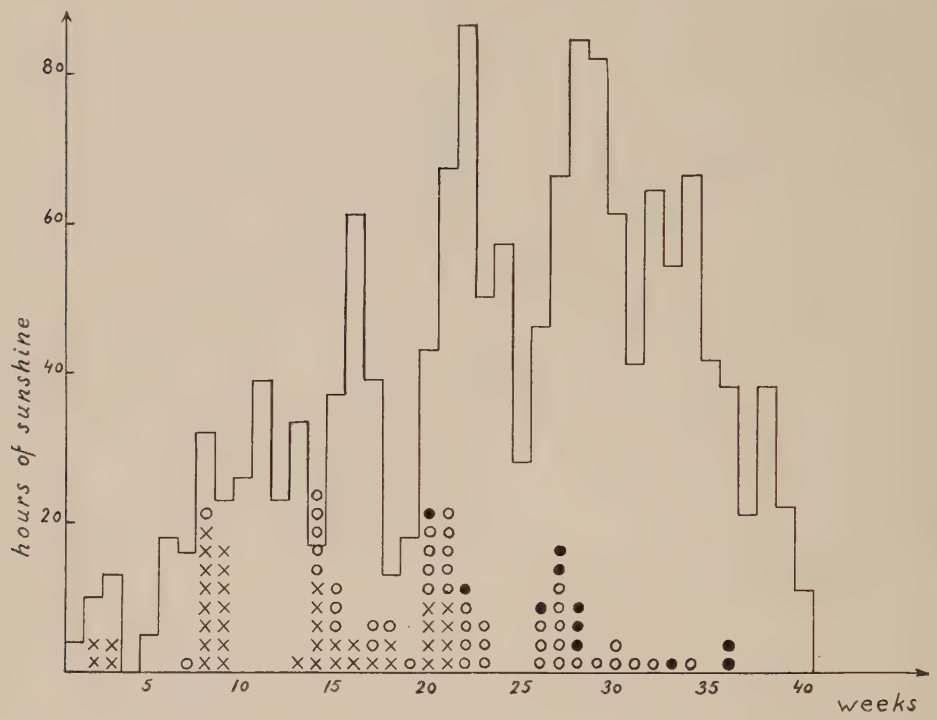

FIG. 1.—× First appearance. ○ Aggravations during treatment. ● Relapses after treatment.

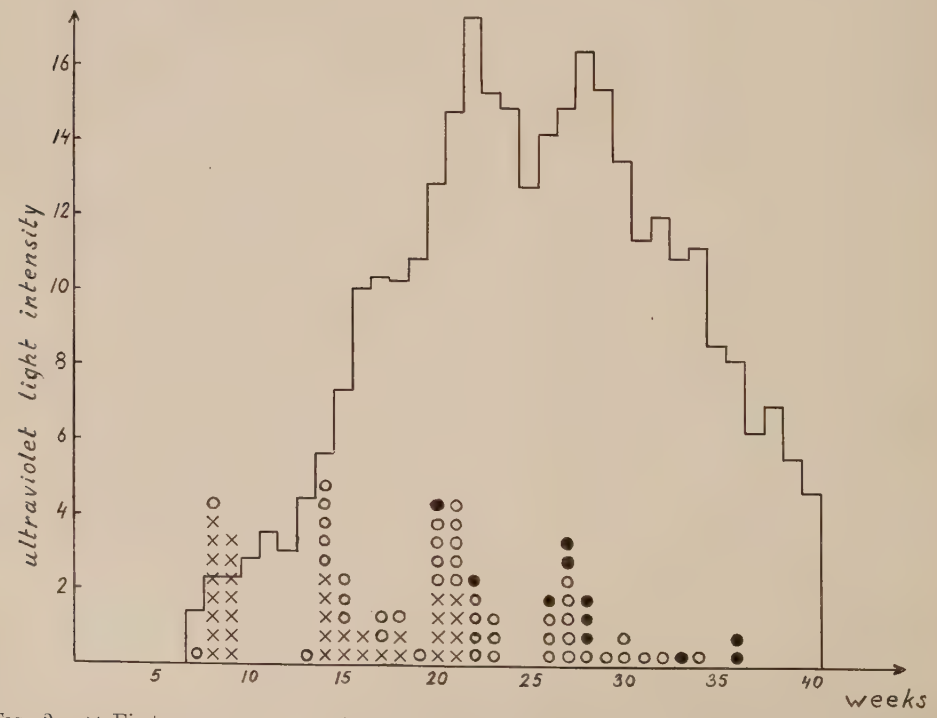

FIG. 2.—× First appearance. ○ Aggravations during treatment. ● Relapses after treatment

Despite the uncertainty which unavoidably attends data of this nature, Fig. 2 reveals how closely eruptions and aggravations followed the periods when the *increase* in light intensity was greatest. A comparison of the results given in Fig. 1 with those shown in Fig. 2 reveals how Fig. 2 gives a much more accurate picture of the relationship between eruptions and light intensity.

Hence, records of sunshine hours made according to Campbell-Stokes's method where there is a shift towards the red part of the spectrum are of limited value, while limitation to a specified range of wavelengths will enable more useful climatologic analyses to be made.

It seems likely, therefore, that polymorphic light eruptions are due more to *increases* in the intensity of ultraviolet rays than to the *absolute* intensity.

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TINEA CAPITIS IN EAST LONDON AND ESSEX, 1944–1955.

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The purpose of this article is to review the cases of tinea capitis treated over a twelve-year period in the London Hospital Skin Department—a clinic in which about 6000 new patients are seen each year.

Five hundred and sixty-five children were treated by x-ray epilation during the twelve years. Positive cultures are recorded for 375 cases. Four groups are separately described.

1944–1946.

In 1944, as the number of x-ray epilations recorded for the preceding two years had increased from 20 to 45, it was decided to investigate the types of scalp ringworm. I was asked to collect specimens of hair from tinea capitis cases at two of the five weekly out-patient sessions during 1944–1946, and these were submitted to Dr. J. T. Duncan (working for the Medical Research Council) for culture. The results, together with the x-ray epilation figures for the corresponding years, are shown in the first part of Table I.

Table I.—*All Cases of Tinea Capitis and Circinata* 1944–55.

	1			2						3			
Year.	1944.	1945.	1946.	1947.	1948.	1949.	1950.	1951.	1952.	1953.	1954.	1955.	Total.
Total X-rayed	63	135	191	66	34	33	13	7	10	4	6	3	565
Total investigated	29	51	17	39	25	68	50	48	14	17	14	3	375
Fluorescing tineas :													
M. audouini	18	32	11	20	10	18	3	3	3	0	4	0	122
M. canis	9	16	6	15	12	46	45	40	10	17	8	1	225
Other tineas :													
T. sulphureum	1	2	0	0	2	2	1	3	1	0	2	1	15
T. discoides	1	1	0	2	0	1	1	1	0	0	0	0	7
T. mentagrophytes	0	0	0	1	0	1	0	0	0	0	0	1	3
T. quinckeanum	0	0	0	0	1	0	0	1	0	0	0	0	2
T. equinum	0	0	0	1	0	0	0	0	0	0	0	0	1
Tinea circinata :													
M. audouini	0	0	1	0	0	0	0	0	0	0	0	0	1
M. canis	2	2	0	4	2	12	7	9	1	0	1	0	40
T. gypseum	0	0	1	0	0	0	1	0	0	0	0	0	2
T. discoides	0	0	0	1	0	0	0	0	0	0	0	0	1

During those busy years the majority of children in whom tinea capitis was diagnosed, either by the finding of fluorescent hairs under Wood's light or by positive microscopy, were treated by x-ray epilation. No attempt was made to differentiate between *Microsporum audouini* and *M. canis* infections when ordering treatment. The only children not epilated were those under three years of age or any who had a kerion or other inflammatory reaction. Treatment of these was confined to local applications of fungicides.

There were twice as many *M. audouini* infections as *M. canis*. One kerion was associated with *M. canis* infection; three non-inflammatory ringworms were caused by *Trichophyton sulphureum* and two by *T. discoides*. Of six cases of tinea circinata, four grew *M. canis*, one *M. audouini* and one *gypseum*.

1945–1947: Essex Epidemic.

In May 1945 an outbreak of tinea capitis occurred in Children's Homes of the Essex County Council. Facilities for examination, investigation, treatment and reporting were given by the County Medical Officer, Dr. W. A. Bullough, and I was sent to investigate all the Childrens' Homes in Essex. A family of four children, not then known to be infected, had been admitted to one of the homes two years previously. Children had been moved from one home to another, and by 1945 cases of tinea capitis were suspected in several of the homes.

I visited all the homes in turn and examined all the children with a portable Wood's light. Fifty cases of tinea capitis were found initially, most of the children showing several large patches of brilliantly fluorescing hairs. Characteristic grey scaling was not noted and only some of the children had semi-bald patches. Careful washing of the head had been a regular practice in the care of the children, whose general health and well-being were excellent. Subsequently, second and third inspections revealed a further twenty-one cases, showing small patches or only isolated fluorescing hairs. Cultures, undertaken by Dr. Jacqueline Walker, showed *M. audouini* to be present in every case examined.

Tinea circinata.—Seventeen children and three attendants were found to have tinea circinata and a random sample from these also showed *M. audouini* infection. These were all cured within a month.

Ages.—The ages of the children with tinea capitis ranged from a year and ten months in a babies' home (seventeen children under three years of age were infected) to twelve years old in homes for older children. No adolescents or adults were found to have tinea capitis.

Management.—The infected children were isolated in four centres, the uninfected contacts being kept away from school until pronounced free over a period of two months and after at least three inspections under Wood's light had proved negative. Schooling was provided for the infected children by teachers visiting the homes.

Two portable Kromayer lights with Wood's glass attached were acquired by the County and made available to the hospitals responsible for the treatment of the patients. Each child was examined twice a week by specially trained members of the nursing staff.

Manual epilation of the infected hairs and inunction with a variety of fungicides were carried out, the scalp having been closely shaven. The greatest

credit is due to the nurses who succeeded in curing forty-one cases by this method. There were no facilities for x-ray epilation in the County and it was not until July 1945 that arrangements could be made with the London Hospital and with Hammersmith Hospital to carry this out. Thirty children were then epilated with x-rays, the older children and those with the largest fixed patches being treated first.

The last visit for final checking was paid in January 1946, observation having been continued over twenty months.

1947–1952.

From 1947 most cases of ringworm affecting the hair, the skin, or the nails were referred to me at a special clinic. Facilities for culture of fungi were provided in the out-patient clinical laboratory by Dr. H. B. May. The second part of the table shows the number of tinea capitis patients with positive culture results recorded as attending this clinic between 1947 and 1952.

Microsporum audouini.—X-ray epilation was the method of choice for treating proved *M. audouini* scalp infections in children over the age of three. No cases were seen at or after puberty. The epidemic apparently came to an end in 1950.

One child treated two years previously, while in the country, with iodine for tinea capitis, showed the whole head covered with fluorescing hairs.

Microsporum canis.—This type of infection usually responded to local medicaments within four to seven weeks; about half-a-dozen cases, of widespread infection, needed x-ray epilation. It was noted that in these the fluorescing hairs had disappeared in seven to fourteen days after the treatment; this was before the rest of the hairs had begun to loosen, which usually occurred eighteen to twenty-one days after exposure.

One mother of an infected child showed a fluorescing patch on her scalp which took several months to clear with local applications. A boy of sixteen was also found to have a *M. canis* scalp infection. One child had fluorescing eyelashes as well as a patch on the scalp. There were three kerions from *M. canis* scalp infections.

There was no evidence in any of the *M. canis* infections of child to child infection. The largest numbers of cases were seen in 1949, 1950 and 1951.

Trichophyton sulphureum.—Nine cases of this infection were noted.

Other fungi.—Trichophyton discoides five times and *T. mentagrophytes* on two occasions caused an inflammatory ringworm, There were also two cases of *T. quinckeanum* infection.

Tinea circinata.—M. canis was grown on thirty-five occasions; *T. discoides* once; *T. mentagrophytes* twice and *M. gypseum* once. One boy with circinate tinea of the occipital hair margin showed so-called macroconidia on direct examination of hair in potassium hydroxide.

1953–1955.

In 1953 the tinea patients were no longer seen in a special clinic, and the mycological investigations were undertaken by the Registrars. I am indebted to Dr. R. V. Grange and to Dr. Marjorie Ridley for letting me have the figures of tinea capitis cases for these three years, thus bringing this survey up to date. They are recorded in the third part of the table. *M. canis* infections continued to occur until 1954, but in 1955 the epidemic of scalp ringworm had finished.

Three cases of *T. sulphureum* and one of *T. mentagrophytes* infection are recorded. The one case of tinea circinata grew *M. canis*.

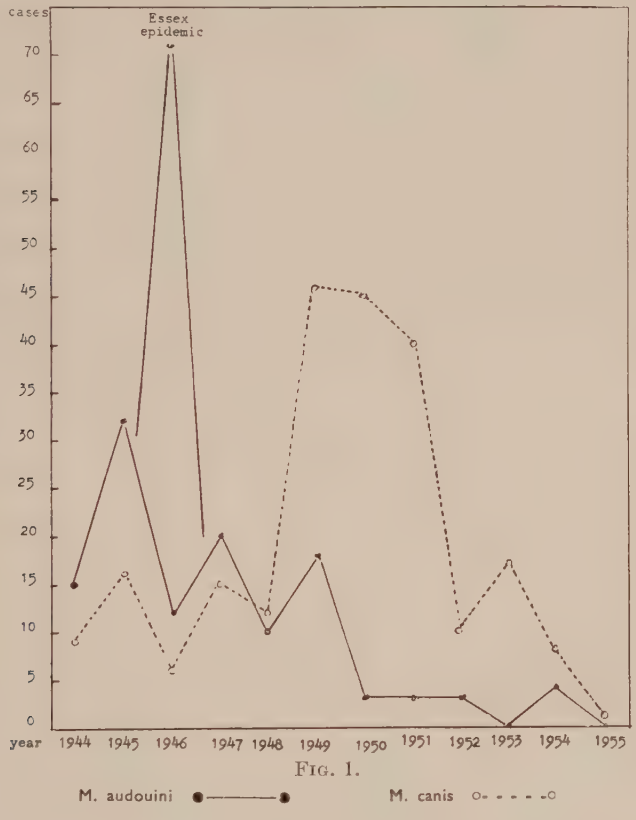

Fig. 1.

Comments.

The table shows an analysis of all cases of tinea capitis recorded between 1944 and 1955. Fig. 1 shows the incidence of the fluorescing ringworm cases during those years.

I have pleasure in placing on record my thanks to Dr. Arthur Burrows and to the late Dr. W. J. O'Donovan for their interest in allowing me to hold the position of Clinical Mycologist for six years, covering the peak period of the ringworm epidemic, and for the co-operation of all my dermatological colleagues at the London Hospital. Dr. Jacqueline Walker, to whom I continued to submit specimens for her work for the Medical Research Council, has always been most willing to advise on special problems.

ACANTHOMATA APPEARING AFTER ECZEMA.

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The appearance of small warty lesions on areas of skin affected by eczema is a not uncommon occurrence. Dermatologists are quite familiar with these lesions, but very little mention of them can be found in the literature. Radcliffe-Crocker (1903) with reference to seborrhoeic keratosis said " I have seen a very copious crop on the chest, associated with acute eczema, in an elderly woman ". These small warty lesions resembling seborrhoeic keratoses frequently appear during the course of eczema and exfoliative erythroderma and the majority disappear after a variable interval of time. During the past year I have followed several of these cases and in view of the paucity of reference material on such an interesting clinical picture I felt it was worth while to present my observations and findings in four cases followed for three to six months.

Three of these patients had constitutional eczema and the fourth had a generalized dermatitis due to allergic sensitivity to primula. Each patient received only local treatment consisting of potassium permanganate (1 : 10,000) baths, calamine cream, zinc cream or Lassar's paste : two patients were also treated with a paste containing 3% of coal tar, and with ½ to 1% hydrocortisone ointment.

In each patient a large number of small slightly raised verrucous lesions wers observed after the eczema had begun to subside. They were noticed a few days after the eczematous process had lessened in severity and appeared in one simultaneous crop. The common site was the back and front of the chest, but the lower parts of the fore-arms and the wrists were also involved in two patients. The patients were in the older age group and 3 out of 4 had, in addition, numerous seborrhoeic keratoses. The new lesions are quite distinct from the already existing more deeply pigmented seborrhoeic keratoses with the " stuck-on " appearance of their somewhat greasy scale (Fig. 1). They are slightly raised above the surrounding skin surface and are white or faint yellow in colour, measuring from a few millimetres to one centimetre in diameter. They may be diffusely scattered over the back and front of the chest or arms, but more often they are located amongst the already existing seborrhoeic keratoses in the central areas of the back and front of the chest — the so-called seborrhoeic areas.

Biopsies were taken of typical lesions and microscopically showed an area of slight hyperkeratosis and acanthosis, but not the familiar characteristics of seborrhoeic keratoses.

After a period of three to six months most of the lesions had disappeared, but a few remained unchanged or became slightly darker in colour, and were then indistinguishable from seborrhoeic keratoses.

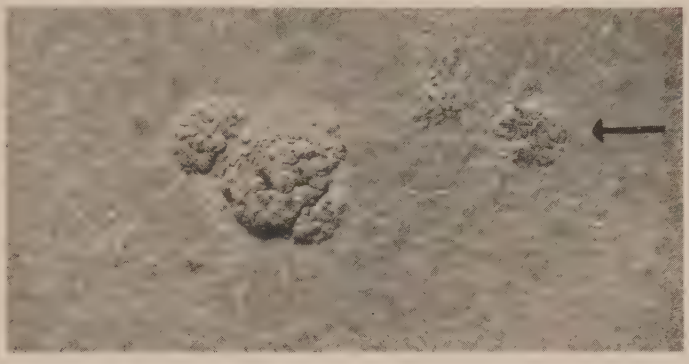

Fig. 1.—The arrow points to one of the new verrucous lesions lying beside a larger typical seborrhoeic keratosis.

Case Reports.

Case 1.—A man aged 57, a florist by trade, developed a contact dermatitis due to primula which became generalized. While in the hospital numerous small warty lesions appeared on the back and front of the chest, scattered among a few seborrhoeic keratoses which had been present for many years. The microscopic section (Fig. 2)

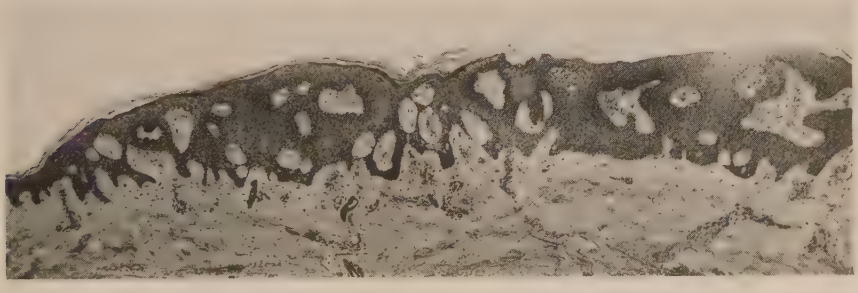

Fig. 2.

showed an area of epidermal hyperplasia and slight hyperkeratosis, findings which were not sufficient for the diagnosis of a seborrhoeic keratosis. When this patient was seen again six months later, most of the lesions had disappeared but some remained unchanged or were slightly darker in colour.

Case 2.—A man of 66 years of age had widespread eczema, which settled down in the hospital on local treatment. Numerous small warty lesions were noticed mainly

on his arms after the eczema had begun to improve. A biopsy was taken of a typical lesion on the wrist, the histology of which showed a localized area of hyperkeratosis and moderate acanthosis with an undulating epidermis somewhat suggestive of an epidermal naevus or of a verruca due to tar. After an interval of four months most of the lesions had disappeared, but a few remained unchanged in size, but darker in colour.

Case 3.—A 52-year-old man, with eczema of generalized distribution and pompholyx of the hands and feet, developed small verrucous lesions mainly on the arms. A biopsy of a typical lesion showed an area of hyperplasia of the epidermis. The sites involved were the extensor aspects of the lower forearms, arms, and chest. No seborrhoeic keratoses were present. When seen again after an interval of three months, no lesions remained.

Case 4.—A man aged 72 with a persistent constitutional eczema was admitted during an acute exacerbation. When his eczema improved, many small verrucous lesions were observed. These were situated mainly on the back, among numerous pigmented seborrhoeic keratoses which had been present for years. The microscopic section showed a similar histology to the cases above, and was reported as an acanthoma. The lesions had decreased in number four months later but some had persisted and appeared darker in colour.

Discussion.

These small verrucous lesions are likely to be regarded as seborrhoeic keratoses when the two are seen in the same area. Seborrhoeic keratoses, however, are persistent lesions, whereas the majority of those under discussion disappear in from three to six months. This fact, as well as their development in association with eczema and their occurrence sometimes in areas where seborrhoeic keratoses are not often found, appears to place them in a different category.

Histologically these warty lesions show slight hyperkeratosis and acanthosis as the outstanding feature, and no evidence of eczema could be found in any of the sections. The one biopsy from the wrist showed a more irregular epidermis with tooth-like undulations which might be a local tissue reaction explained by the different site. The others showed acanthosis with normal cytology.

The histology thus differs from that of a seborrheoic keratosis, the features of which have been pointed out by numerous writers, including Pollitzer (1890), and more recently by Becker (1951), as showing hyperkeratosis, acanthosis, and papillomatosis causing invagination of the horny layer and forming cystic inclusions of horny material.

The acanthomata here described differ, therefore, both clinically and histologically from seborrhoeic keratosis, though the frequent occurrence of the two types of lesion in the same subject suggests a common constitutional background. The epidermal stimulus appears in one to be the non-specific inflammatory trauma of eczema, but in the other the only recognizable factors are an inherited disposition associated with ageing. Tar may produce similar lesions, but whether other substances used in the treatment of eczema can do so is uncertain.

Summary.

Four cases of verrucous lesions occurring during eczema are reported. Most of the lesions disappeared in 3–6 months. Histologically, these are acanthomata. Their relationship with seborrhoeic keratosis is discussed.

Acknowledgements.

I wish to express my gratitude to Dr. G. B. Dowling for his advice and help ; to Dr. H. Haber for his advice on the histopathology ; and to Drs. J. E. M. Wigley and G. B. Mitchell-Heggs for allowing me to present their cases. I wish also to thank Mr. R. J. Lunnon, A.I.B.P., Photographer to the Institute of Dermatology, for the photographs.

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XIth INTERNATIONAL CONGRESS OF DERMATOLOGY, 1957.

At a meeting of the International Committee of Dermatology in Zürich on 28 and 29 January, 1956, the following subjects for main themes and symposia were decided for the XIth International Congress of Dermatology to be held in Stockholm on 31 July–6 August 1957.

Main Subjects :

Biology of Skin Surface.
Systemic Reticuloses.
Vascular Allergy.
Occupational Dermatoses.
Newer Developments in Dermatological X-Ray Therapy.
Cosmetic Dermatology.

Symposia :

Atopic Dermatitis (Prurigo Besnier-Neurodermitis).
Antibiotics in Dermatology.
Detergents and Barrier Creams.
Bullous Dermatoses.
Histochemistry in Skin Diseases (Carbohydrates of the Skin).
Electron Microscopy.
Photo-allergy.
New Methods of Detection of Drug Allergy.
Radioactive Isotopes in Dermatology.
Ichthyosiform Genodermatoses.
L. E. Cell Phenomenon.
Specific Syphilis Serology (TPI, TPA Tests, etc.).
Epidemiology of Treponematoses.
Long Term Results in Syphilis Treatment.
Non-Gonococcal Urethritis.
Experimental and Clinical Hormonal Research in Dermatology.
Classification of Dermatomycoses.

Committees :

Nomenclature and Classification.
Directions for the Training of Dermatologists.

It was also decided that short papers should be accepted only on subjects connected with the main subjects and symposia.

A preliminary programme for the Congress will be distributed to dermatologists within the next few months.

A number of names have already been put forward by the President and Secretary of the British Association of Dermatology in connection with the subjects listed above, and more suggestions for speakers would be welcomed. After the Annual meeting of the Association in July a list will be made for recommendation to the President and Secretary General of the Congress who will select names after consideration of suggestions from other countries, and their decision will be final.

Names of anyone interested in any of the subjects, and who are prepared to take an active part in reporting, discussing, etc., should be sent to Dr. G. B. Mitchell-Heggs, 56, Gower Street, W. C. 1., who is Local Secretary for the Congress.

BOOK REVIEW

Chemotherapy of Tuberculosis.*

In this well-written monograph from the Hamburg University Skin Department the testing of many substances for their anti-tuberculous activity in vitro and in experimentally infected white mice is described. The clinical results with thiosemicarbazone and isoniazid illustrated the great value of the latter and 154 cases are listed. Resistance to isoniazid was not encountered. After clinical cure lesions still contained living virulent tubercle bacilli but relapses again responded to isoniazid. Derivatives of the latter, found effective by animal experiment, also gave good clinical results in a few cases. The search for new chemotherapeutic agents remains empirical as the metabolism of the tubercle bacillus has not been worked out and the action of isoniazid not understood. M. F.

* *Untersuchungen zur Chemotherapie der Hauttuberkulose* Dr. J. Meyer-Rohn (1956) Stuttgart : G. Thieme Verlag. Pp. 81. Illus. 12. Price DM. 8. 65.

CURRENT LITERATURE

FELTY'S SYNDROME WITH ULCER OF THE LEG. N. Hjorth. (1954) *Acta derm.-venereol., Stockh.*, **34**, 67.

Patient with arthritis, splenomegaly and neutropenia had a leg ulcer of 3 years' duration which readily responded to corticotropin on 2 occasions. G. A. H.

ALLERGIC SENSITIZATION OF THE SKIN AND ORAL MUCOSA TO ACRYLIC DENTURE MATERIALS. A. A. Fisher. (1954) *J. Amer. med. Ass .*, **156**, 238.

Over 90% of the dental plates made to-day in the United States are made from acrylic resins. The acrylic material consists of a liquid monomer, methyl methacrylate, and a powdered polymer, polymethyl methacrylate. The two substances are mixed by the dentist or mechanic and heated. Other materials which will polymerize at room temperatures (self-curing) are used for repairing and relining dentures.

Four dentists or mechanics with contact dermatitis gave positive patch test reactions to both the regular monomer and the self-curing monomer and to the self-cured denture material itself. They did not react to the polymer or to the heat-cured denture material in which the monomer has been completely polymerized.

Twenty patients with sore mouths caused by dentures were investigated but no instance of sensitivity to heat-cured acrylic resin was discovered. Self-cured material, however, contains sufficient unpolymerized monomer to give rise to sensitization reactions.

The denture material could not be incriminated in 8 patients with perleche. Patch-testing by strapping a dental plate to the forearm readily gives false-positive reactions within 48 hours, as was demonstrated in 70 controls. These reactions are not eczematous but are non-specific pressure effects. Such false-positive reactions can easily result in misleading deductions.

When sensitivity to acrylic denture material is suspected patch-testing can be carried out most satisfactorily with the monomer, methyl methacrylate. A. J. R.

PATCH TEST STUDIES. A NEW TECHNIQUE. A. I. B. Fernstrom. (1954) *Acta derm.-venereol., Stockh.*, **34**, 203.

It is claimed that a new technique maintaining continuous pressure will give stronger responses with low concentrations of tested irritants, and responses often, where the routine method fails. An 8 mm. square of blotting paper is covered by 21 mm. square of rubber-cloth or cellophane, covered with a block of sponge plastic sorbo rubber 19 by 19 by 4 mm. attached with tape to the skin. G. A. H.

ON THE BEHAVIOUR OF PSORIASIS. H. W. Siemens. (1954) *Acta derm.-venereol., Stockh.*, **34**, 305.

Six of 19 patients with psoriasis showed great improvement during one month in hospital without treatment. The other 13 cases without spontaneous improvement showed improvement of untreated areas during chrysarobin treatment of co-existing lesions. Untreated lesions may " co-react " to the treatment of other lesions. G. A. H.

MYO-EPITHELIOMAS OF THE SKIN. J. Efskind and R. Eker. (1954) *Acta derm.-venereol., Stockh.*, **34**, 279.

Clinical and pathological account of 21 cases. Characteristic cells in myo-epitheliomas are :

1. Polygonal cells with clear vacuolized cytoplasm with granules staining like glycogen.
2. Spindle-shaped cells arranged in strands and stripes.

Such tumours appear to be related to the sweat glands or their anlage. G. A. H.

ON OINTMENTS CONTAINING SALICYLIC ACID. S. A. Kvorning. (1954) *Acta derm.-venereol., Stockh.*, **34**, 87.

The fatal dose of salicylic acid is 20 grams, whilst smaller amounts cause toxic symptoms of headache, confusion, vertigo. The urinary excretion of 6 patients totally anointed with 2%

salicylic acid in petrolatum showed 300–600 mg. in a 24-hour specimen of urine, in 2 patients, none in 4 others. Salicylates should not be given internally at the same time, to prevent summation effects and sodium bicarbonate, citrate or lactate should be given in patients anointed over large areas with salicylate. G. A. H.

CLINICAL STUDY OF CAUSES OF DEATH IN SARCOIDOSIS. I. Gilg. (1954) *Acta derm.-venereol., Stockh.*, **34**, 47.

The cause of death in 20 fatal cases of sarcoidosis of a total of 37 was cardiac failure from lung and heart involvement. G. A. H.

THREE CASES OF ALOPECIA TOTALIS TREATED WITH ACTH AND CORTISONE. B. B. Jorgensen. (1954) *Acta derm.-venereol., Stockh.*, **34**, 17.

The results of 3 cases of alopecia totalis treated with cortisone or ACTH confirm previous findings of an apparent regeneration of hair and marked hypertrophy of follicles in areas showing characteristic atrophy of long standing cases. Continuous treatment is required to maintain growth and the risks are not warranted as yet. G. A. H.

RESPONSES OF THE HUMAN ECCRINE SWEAT DUCT TO CONTROLLED INJURY. GROWTH CENTRE OF THE "EPIDERMAL SWEAT DUCT UNIT". W. C. Lobitz, J. B. Holyoke and W. Montagna. (1954) *J. invest. Derm.*, **23**, 329.

This is a study of the regeneration of the epidermis and epidermal portion of the sweat duct after mechanical destruction. Two methods were used: stripping with Scotch tape which leaves the basal layer *in situ*, and abrasion with a small carborundum burr which not only removes the epidermis but also brings about "necrobiosis" of the papillary body. This is attributed in a rather off-hand way to heat or friction.

The course of events at 4, 8, 12, 24 hours and 2, 3, 5, 7, 9, 12 and 14 days was observed by means of punch biopsies.

With the strip method the cells of the surviving basal layer swell up except those at the point where the sweat duct enters the epidermis; and these form a centre of repair activity. In the burr experiment the distal portion of the dermal part of the duct succumbs together with the papillary layer, but it is soon replaced by cells ready to repair the damage. The basal cells spread between the crust and the dermis, while the cells of the lumen spill over in the form of a coiled tube the required part of which is soon embedded in the new covering epithelium. J. H. T. D.

ECCRINE FUNCTION IN PSORIASIS. R. R. Suskind. (1954) *J. invest. Derm.*, **23**, 345.

Not only are the active lesions of psoriasis anhidrotic, but the healed sites, clinically normal albeit retaining minimal histological signs of psoriasis, may remain so for as long as 21 months; and neither by parasympathetico-mimetic nor by thermal stimuli can visible sweating be elicited.

Cytologically the eccrine glands cannot be distinguished from normal resting glands and they contain glycogen. Although no evidence of sweat retention has been seen the author suspects obstruction of the duct by acanthosis and accelerated keratinization; for if it were just a disturbance of secretory function on the part of both covering epithelium and sweat gland it is odd that the pilosebaceous follicle should escape altogether. J. H. T. D.

A STUDY OF THE HOST PARASITE RELATIONSHIP OF TRICHOPHYTON MENTAGROPHYTES AND TRICHOPHYTON RUBRUM WHEN INTRODUCED INTO THE GRANULOMA POUCH OF RATS. V. D. Newcomer, E. T. Wright and T. H. Sternberg. (1954) *J. invest. Derm.*, **23**, 359.

The granuloma pouch is not a natural receptacle but an artificial sinus produced by injecting air with or without croton oil, hydrocortisone, etc., into the subcutaneous tissues between the scapulae. The fungi, attacked by leucocytes and histocytes, survived with difficulty in most cases only just well enough to prove that they can survive without a substrate of keratin or culture media. In 2 of the 42 rats evidence of dissemination was found in liver and spleen. J. H. T. D.

WHOLE MOUNTS FOR THE STUDY OF SKIN AND ITS APPENDAGES. G. W. Hambrick and H. Blank. (1954) *J. invest. Derm.*, **23**, 437.

An important contribution to the study of epidermal anatomy. Excellent photomicrographs of dark-ground polarized and phase-contrast preparations of unfixed tissue are accompanied by

stimulating descriptions and by carefully reasoned conclusions based on the appearances demonstrated.

There is also a useful account of various means recommended for dermoepidermal separation and of their special indications. In this piece of work collagenase (a product of the microbe *Clostridium histolyticum*) and sodium iodide (one of the Hofmeister series) were employed.

J. H. T. D.

CLINICAL EVALUATION OF QUANTITATIVE DIFFERENCES IN ULTRAVIOLET ABSORPTION OF COMPOUNDS CONTAINING THE SUBSTITUTED BENZOIC ACID NUCLEUS. L. C. Harber. (1954) *J. invest. Derm.*, **23**, 427.

In order to ascertain the value of PABA, menthyl anthralinate, phenyl salicylate, glycerol paraminobenzoate and tannic acid as sun screens, quartz capsules containing equimolar alcoholic solutions ranging between 3×10^{-3} M to 3×10^{-5} M were placed on the surface of the skin, or 5% solutions of the same drugs were painted on and allowed to dry. Exposures were then made to sunlight (2 hours midday June, New York) and U.V.L. one and a half times the ascertained erythema dose.

Tannic acid seemed to be the best. J. H. T. D.

THE EFFECTS OF ULTRAVIOLET LIGHT ON THE SULPHYDRYL AND DISULPHIDE GROUPS OF NORMAL HUMAN SERA. R. W. Goldblum, W. N. Piper and C. J. Olsen. (1954) *J. invest. Derm.*, **23**, 463.

U.V.L. has an important influence on cornification; it is believed that during keratinization the -SH groups of the granular layer are converted by U.V.L. to the -S-S- groups of keratin. In this preliminary study serum has been employed as a substitute for keratin; and it has been shown that U.V.L. round about 2350 Å does have this sort of action. J. H. T. D.

RECOVERY OF NORMAL AND ECZEMATOUS SKIN FROM ALKALI. T. Cornbleet and N. R. Joseph. (1954) *J. invest. Derm.*, **23**, 455.

Burckhardt's caustic soda and indicator dye technique is here translated into terms of soap solution and quinhydrone electrode; and the differences noted by that author between the skin of normal subjects and that of patients with atopic eczema thereby confirmed. This work has affinities with the barrier cream superstition, that is to say the quest for something out of a bottle that is going to help the horny layer of the skin to keep out external irritants in general and alkalies in particular—an attempt comparable with that of case-hardening the diamond. In the reviewer's experience the atopic subject is remarkably infrequent among those seeking disablement benefit for "dermatitis." The general idea is that the hand should first be prepared with amberlite; immersed in the noxious soap solution; time allowed for equilibrium of certain cation exchange systems, in particular the base-binding properties of keratin and mucopolysaccharides (the condition of which may depend on general health and endocrine states); washed off; exposed as necessary to the relevant industrial process; and finally, treated once more with amberlite.

This paper is full of useful and stimulating ideas, and must be read by all who are interested in the problems of dust liquids and vapour, or the means employed by the housewife for their disposal. J. H. T. D.

SEBACEOUS CYSTS: CORRELATION OF CLINICAL AND PATHOLOGICAL DIAGNOSES IN THREE HUNDRED CASES. S. Gross. (1953) *J. Amer. med. Ass.*, **152**, 813.

Among 6600 surgical specimens examined in a department of pathology 300 had been diagnosed clinically as sebaceous cysts. In 52 of them the clinical diagnosis was incorrect. The 24 different pathological conditions in this group included lipoma (7), fibroma (5), inflammatory changes (5), sclerosing haemangioma (4), pigmented naevi (4), and one or more examples of many of the rarer skin tumours such as leiomyoma, granular cell myoblastoma and glomus tumour. The importance of histological examination of lesions excised as sebaceous cysts is emphasized.

A. J. R.

TATTOOING OF NAEVUS FLAMMEUS FOR PERMANENT CAMOUFLAGE. H. Conway. (1953) *J. Amer. med. Ass.*, **152**, 666.

Two hundred and sixty-three patients with naevus flammeus were treated by tattooing with carefully matched insoluble pigments. Of all patients applying for treatment, in only 15% has

biopsy or therapeutic trial shown the naevus to be immediately subpapillary in site. These cases could not be successfully treated by this method. The remaining patients had lesions which were subdermal or in the lower dermis, and of 192 who completed treatment the naevus was satisfactorily camouflaged in 83%. The technique, which clearly requires considerable skill and experience and unlimited patience, is described in detail. A. J. R.

MILIARIA. W. B. Shelley. (1953) *J. Amer. med. Ass.*, **152**, 670.

A general review of the skin lesions produced by retention of sweat. Shelley believes that it is the maceration of the skin surface with sweat which results in abnormal keratinization and occlusion of the sweat duct orifice and leads to the development of the primary types of miliaria, miliaria crystallina and miliaria rubra. Miliaria pustulosa usually follows a dermatitis. Miliaria profunda is usually secondary to prolonged recurrent miliaria rubra. Treatment should consist of measures to reduce the need for sweating, topical and systemic therapy being without specific value. A. J. R.

HISTOLOGICAL CHANGES IN LUPUS VULGARIS UNDER TREATMENT WITH ISONICOTINIC ACID HYDRAZIDE (NEOTEBEN). O. Braun-Falco and B. Rathjens. (1953) *Derm. Wschr.*, **127**, 390.

For this investigation 50 biopsy specimens (400 sections) were examined. Already 2–3 weeks after the onset of treatment the appearances become sarcoid-like with epithelioid cells and a narrow zone only of lymphocytes; the epithelioid cells then become vacuolated, lose their sharp outline, and tend to form conglomerates resembling giant cells. These persist when the other lysed epithelioid cells disappear, but they in turn become invaded and replaced by lymphoid cells from the surrounding zone. Later this lymphoid reticulum becomes denser and sparser till all that remains is a slight perivascular lymphocytic infiltrate. This corresponds to the clinically healed state. Scar tissue is not seen histologically. M. S. S.

CONCORDANT BILATERAL TRIGEMINUS NAEVUS IN HOMOLOGOUS TWINS WITH SIMILAR ELECTROENCEPHALOGRAPHIC FINDINGS. H. Teller, B. Lindner and W. Götze. (1953) *Derm. Wschr.*, **127**, 488.

These girl twins had an Unna's naevus of the neck and lichen pilaris of the extensor surface of the arms. The clinical appearances in both were strikingly similar, as were also the electroencephalographic findings, which were normal. M. S. S.

THE EVALUATION OF NYSTATIN ON THE COURSE OF COCCIDIOIDOMYCOSIS IN MICE. V. D. Newcomer, E. T. Wright, A. L. Leeb, J. E. Tarbet and T. H. Sternberg. (1954) *J. invest. Derm.*, **22**, 431.

This antibiotic, provided that it is administered intraperitoneally and not too long after infection, can be given in sufficient dosage (20 mg. per kilo) to avoid the customary fatal issue and to secure healing and negative bacteriology. J. H. T. D.

DEODORIZING EXPERIMENTS WITH ION-EXCHANGE RESINS. K. Ikai. (1954) *J. invest. Derm.*, **23**, 411.

The author concludes that the deodorant effect in the axilla of Amberlite XE98 together with XE64, and of other combinations very nearly as good, results almost exclusively from adsorption of the odoriferous substances produced, rather than indirectly by the maintenance of a pH unfavourable to bacteria or by adsorption of the bacteria themselves. The base in which these resins may be applied to the skin needs of course to be anionic: but we have the fairly wide choice of methyl cellulose, polyethylene glycol, certain wetting agents, white vaseline and various mixtures thereof. J. H. T. D.

STUDIES OF THE ENZYMES OF PURINE METABOLISM IN SKIN. II: NUCLEOSIDE DEAMINASES OF RAT SKIN. W. D. Block and D. V. Johnson. (1954) *J. invest. Derm.*, **23**, 471.

Nucleoprotein derived from dietary or endogenous sources is presumably first broken down for excretion or re-use into protein and nucleic acid. The latter forms nucleotides with ribose and phosphates, sheds the last to become nucleoside, and this paper is concerned with the next stages towards uric acid.

In the course of investigating these matters attention has momentarily rested on the skin ; and, it appears, that of rats contains a relatively active enzyme for the deamination of adenosine to yield the intermediate product inosine. This particular enzyme is much less active in regard to guanidine and xanthine. J. H. T. D.

STUDIES ON FUNGI ENCOUNTERED IN THE ATMOSPHERE. I : THE PRESENCE OF FUNGOUS SPORES AND OF POLLENS IN KOH PREPARATIONS. F. C. Bocobo and A. C. Curtis. (1954) *J. invest. Derm.*, **23**, 470.

II : PRODUCTION OF DERMATITIS IN GUINEA-PIGS BY CRUDE ETHER SOLUBLE EXTRACTS OF ALTERNARIA HORMODENDRUM PENICILLIUM AND ASPERGILLUS. F. C. Bocobo, A. C. Curtis, W. D. Block and F. J. Stubbart (1954). *J. invest. Derm.*, **23**, 489.

Ragweed pollen and the spores of alternaria are commonly seen in the routine diagnostic potash scrapings made at certain times of the year.

Guinea-pigs can be sensitized to extracts of common atmospheric contaminants. Is there a significance in this for the cutaneous ills of mankind ? J. H. T. D.

THE DILATED PORE, A TRICHOEPITHELIOMA. L. H. Winer. (1954) *J. invest. Derm.*, **23**, 181.

Attention is drawn to a common malformation of the hair follicle, and a few of the epithelioma-like structures that may be revealed by histological examination of it are described. J. H. T. D.

MOLLUSCUM CONTAGIOSUM : A HISTOCHEMICAL STUDY. H. Mescon, M. Gray and G. Muretti. (1954) *J. invest. Derm.*, **23**, 293.

Whether the "inclusion body" of M. contagiosum takes eosin or haematoxylin depends on the reaction to the differentiating rinses. That it has no capsule or, if it has one, it certainly contains no carbohydrate, are among the many findings arising out of this study.

The reactions to McManus, toluidine blue, Bennett's sulphydryl, Feulgen, Sudan IV and Sudan black are described in some detail.

Tests for phosphatase activity are mentioned, but neither their technique nor their purpose are made clear. J. H. T. D.

CUTANEOUS SODIUM AND POTASSIUM DETERMINED BY REVERSE IONTOPHORESIS. B. F. Benjamin and T. Cornbleet. (1954) *J. invest. Derm.*, **23**, 287.

Two small cups each containing lithium nitrate solution and a suitable anode are placed close to one another on the skin and an electric current passed through one of them. Analysis is made of their contents by means of the flame photometer and the contents of the dummy subtracted from those of the live cup in order to arrive at true values.

In disseminated lupus erythematosus there was a decrease of both ions but especially of potassium, and in pemphigus, dermatitis and dermatitis venenata a shortage only of potassium. In L.E. and pemphigus the balance was corrected by ACTH. J. H. T. D.

ACROGERIA (GOTTRON TYPE). A. Bazex and A. Dupré. (1955) *Ann. Derm. Syph.*, **82**, 604.

This is the fourth case reported in a Spanish girl of 12. The most striking feature is the wasted appearance of the hands and feet, though careful examination reveals changes elsewhere and the subcutaneous vessels are visible. The condition is a pure atrophy without erythema and is congenital and apparently non-progressive. Histologically the most important change is seen in the hypoderm with almost complete loss of subcutaneous fat, though there are less marked atrophic changes also in the dermis. Apart from the skin, development is normal with no gross endocrine abnormality. Differential diagnosis must be made from Pick-Herxheimer disease, but this is distinguished by infiltration erythema and other features including pain. Other forms of congenital cutaneous atrophy are reviewed and a useful comparative chart presented. F. F. H.

THE ANILINE TEST AS DETECTOR OF A GROUP SENSITIVITY. C. Scarpa. (1955) *Acta allergol.*, **9**, 203.

Patients hypersensitive to aromatic compounds whether amino or hydroxy-derivatives, especially when in a para position, tend to give positive patch tests to 10% aniline in sweet almond oil. H. T. H. W.

VALUE OF THE KAHN TEST IN AFRICANS. A. J. Evans. (1955) *Brit. J. vener. Dis.*, **31**, 210.

An investigation based upon the findings in 6797 successive cases attending at eight different V.D. clinics held at regular intervals at scattered points throughout the Eastern Province of Northern Rhodesia during the period 1953–1954. The author states that the majority of false positives are most probably due to a multiplicity of different factors and that the practice of automatically disregarding serological positive tests in Africans with no active manifestations of syphilis, simply because false positives are commoner in the tropics, is to be deprecated.

W. G. A.

LATE CONGENITAL SYPHILITIC NERVE DEAFNESS. R. S. Morton. (1955) *Brit. J. vener. Dis.*, **31**, 242.

An interesting review of four female cases varying in age from 20 to 53 years in which the author draws attention to the fact that the third component of Hutchinson's Triad Syndrome, nerve deafness, is the only one which still defies therapeutic efforts and he makes a strong plea for renewed research to rectify this deficiency. W. G. A.

AN APPRECIATION OF PRICE'S PRECIPITATION REACTION IN THE SEROLOGICAL DIAGNOSIS OF SYPHILIS. J. K. Mason and C. Headland. (1955) *Brit. J. vener. Dis.* **31**, 254.

The findings are based upon the testing of 16,000 sera by the Kahn, Wasserman and Price precipitation reactions and the usefulness of the PPR is compared with that of the other two tests. The PPR is shown to be more specific than either of the other reactions, but it is less sensitive as measured by the effect of treatment on the serum reactions. The constitution of a simple test battery is discussed and it is considered that a combination of Kahn, PPR, and Wasserman is practically ideal. In circumstances where the conduct of the Wasserman reaction is contraindicated a combination of the Kahn test and the PPR will give reasonably accurate results. W. G. A.

GENERALIZED GASTROINTESTINAL POLYPOSIS. L. W. Cronkhite and W. J. Canada. (1955) *New Engl. J. Med.*, **252**, 1011.

Two cases of generalized intestinal polyposis with alopecia, onychotrophia, and pigmentation of the skin are described. The authors suggest that the changes in the skin were due to a "generalized deficiency state", especially of vitamin A, the B complex and vitamin C, related perhaps to the widespread polyposis. A. D. P.

BLOOD STREAM INFECTION DUE TO PROTEUS VULGARIS AND CAUSING THROMBOCYTOPENIC PURPURA. M. H. Stein and G. E. Gechman. (1955) *New Engl. J. Med.*, **252**, 906.

A case of *B. proteus* septicaemia with thrombocytopenic purpura is reported. This patient's septicaemia was associated with a stone in the ureter, but in persons under forty is more often found with infection of the ear.

The response to chloramphenicol was excellent. A. D. P.

ON THE AETIOLOGY OF BEHCET'S DISEASE. G. Gottsegen and S. Korossy. (1956) *Derm. Wschr.*, **133**, 33.

The authors endeavour to prove that this rare syndrome which was first described by Jacobini in 1894 is a disease entity, a fact that has frequently been denied by various authorities. They report a case of a returned prisoner of war who had spent some time in Russia near the Turkish border. The first and most serious symptom was a retrobulbar neuritis, and only later and unobtrusively more classical symptoms developed which allowed the diagnosis to be made.

They consider that the disease, a serious and universally fatal condition which is unamenable to treatment, is produced by a virus which can be demonstrated by the presence of elementary bodies in the fluid obtained from lesions and transferred on to chick allantoic membrane and the brain of rats and mice.

The typical condition appears to be acquired in all instances in the Eastern Mediterranean and cases arising sporadically elsewhere are probably not the same condition despite some superficial similarities. W. G. T.

A CASE OF HAILEY-HAILEY DISEASE. S. Korossy. (1956) *Derm. Wschr.*, **133**, 57.

The author reports the first case of Hailey-Hailey disease observed in Hungary and discusses the literature, particularly that relating the condition to Darier's disease or the pemphigus group. W. G. T.

THE INFLUENCE OF ISONICOTINIC ACID HYDRAZIDE ON THE DEVELOPMENT OF LUPUS CARCINOMA. K. Pompe. (1956) *Derm. Wschr.*, **133**, 105.

Though the figures for the development of lupus carcinoma vary considerably between 0·5% and 9% the author has noticed a significant increase in the incidence in the Brno clinic since the introduction of INH. Before that the case incidence was 1 in 1270, and in two years of INH treatment 7 cases were observed in 150 so treated. The daily dose was 250 mg. and the total never exceeded 30 gm. The diagnosis of lupus vulgaris was confirmed by histological examination in all cases before treatment. In 3 a basal and in 4 a squamous cell carcinoma arose. All patients were over fifty and the duration of the lupus varied from 17 to 53 years. Though the influence of previous light and radio-therapy may be of aetiological importance and though the series is of no statistical significance, the author feels that a carcinogenic activity of INH cannot be dismissed on the available evidence. W. G. T.

DERMATOMYCOSIS DUE TO MICROSPORON GYPSEUM WITH UNUSUAL MODE OF INFECTION. H. Langer. (1955) *Derm. Wschr.*, **132**, 1254.

The case of a student of biology suffering from a typical dermatomycosis, which was proved to be due to *M. gypseum*, is described fully. The infection seems to have been acquired during the patient's work in a botanical garden as the result of contact with a plant. This mode of infection does not appear to have been reported before, though the possibility of infection through soil has been mentioned by Gordon, by Ajello, and by Whittle. W. G. T.

THE PHYSICAL DETERMINATION OF LIGHT TRANSMISSION BY LIGHT PROTECTIVES AND BASES. H. Jung-Grimm. (1955) *Derm. Wschr.*, **132**, 1261.

Hitherto the effect of light protectives has been investigated by biological means. The author carries out thorough investigations with a spectrum photometer using infra-red, visible and ultraviolet rays. Absorption was satisfactory only in the case of few of the agents used. These were three German proprietary preparations. W. G. T.

HYALINOSIS CUTIS ET MUCOSAE. H. Gerth and H. Flegel. (1956) *Derm. Wschr.*, **133**, 10.

Detailed description of a case of this uncommon disease, considered to be a lipoidosis by Urbach. There are a number of excellent illustrations and attention is drawn to changes in the ocular fundus. Investigations of serum protein and lipoid phosphorus were carried out repeatedly. There was constant increase in α-, β- and γ-globulins. These were not influenced by cortisone therapy. There was also a raised lipoid phosphorus, which diminished initially during a six weeks' course of cortisone, but later returned to starting figures. W. G. T.

GENERALIZED SECONDARY VACCINIA. K. Merzweiler. (1956) *Derm. Wschr.*, **133**, 22.

On the seventh day after primary vaccination a boy aged 12 developed constitutional symptoms, and on the tenth day numerous secondary lesions were seen on various parts of the body. There was no personal or family history of eczema. Uneventful recovery in the course of four weeks. Infection was thought to have occurred as the result of scratching immediately after vaccination. W. G. T.

THE TREATMENT OF PRURITUS WITH MAGNESIUM. H. Kresbach. (1956) *Derm. Wschr.*, **133**, 137.

Reports of successful treatment of pruritus with magnesium compounds led the author to treat a number of cases of itchy dermatoses with magnesium glutaminate. The treatment was intramuscular injection of a 20% solution in 5 c.c. doses twice daily for 8–10 days. Twenty of 53 patients responded well to this treatment. These were suffering from dermatoses in which vegetative dystonia was considered to be a major factor. Magnesium is considered to have a central sedative effect. W. G. T.

RADIATION THERAPY AND HERPES ZOSTER. C. Kruchen and Th. Schmitt. (1956) *Derm. Wschr.*, **133**, 161.

Herpes zoster after x-ray therapy has been reported on various occasions. Other precipitating conditions mentioned are acute and chronic infection, leukaemia, carcinoma, diabetes, gout and ultra-violet light. The authors add 9 cases of their own. Herpes zoster followed treatment of carcinoma of the breast in most of these. There is a long interval in most cases before the attack of herpes zoster. The virus is supposed to be activated by damage to vessels by x-ray therapy and since vascular connective tissue responds very slowly to x-rays the long latent interval is thought to be in keeping with the hypothesis. W. G. T.

ANETODERMIA IN MALES. A. Steppert. (1956) *Derm. Wschr.*, **133**, 213.

Anetodermia is more common in females than in males. The author reports a case, a male of 68, the oldest so far reported. Most other reported cases occurred in conjunction with other diseases, such as syphilis, dermatitis atrophicans and sarcoid. The early erythematous stage of the disease was favourably influenced by penicillin, but this did not affect the further course of the disease, which is chronic, and recovery has not yet been reported. W. G. T.

YAWS AND ITS TREATMENT IN AFRICA. F. Bauer. (1956) *Derm. Wschr.*, **133**, 237.

Yaws is most common in West Africa, but also occurs in fairly localized regions of Central and East Africa. It is hardly ever seen in South Africa. In some areas in West Africa up to 20% of the population suffer from the disease. Syphilis is rare where yaws is endemic and more common where yaws is rare. The diagnosis is usually made on clinical grounds only as serological tests cannot be carried out in most places. Primary infection usually occurs in childhood. The problem of treatment is intimately concerned with hygiene, financial and geographical considerations. After initial therapy with mercury and iodides, arsenicals were used for a good many years. Now antibiotics are the method of choice ; 1·2 to 4 million units of penicillin are usually given. 90% of cases are thereby rendered free from manifestations, though serology remains positive in just over 60% and should receive attention with arsenicals or further courses of penicillin.
W. G. T.

THE FAMILIAL INCIDENCE OF KNUCKLE-PADS K. Mletzko. (1956) *Derm. Wschr.*, **133**, 242.

The author distinguishes between true and false secondary knuckle-pads. The false ones are caused by occupational and accidental trauma. The familial incidence observed by him and others suggests an endogenous cause, which is denied by those who consider all cases to be traumatic in origin. The frequent association with Dupuytren's contracture is mentioned. W. G. T.

FLUORINE ACNE. I. Andermann. (1956) *Derm. Wschr.*, **133**, 245.

Whereas acne due to halogens has been known for some time, it is less likely to be produced by fluorine, as this element has the lowest atomic weight and dermatoses appear to occur more frequently with increasing weights. The author reports a young woman suffering from acne. She was engaged in the glass industry and used fluoric acid. The connection with her occupation was noticed only when a severe relapse occurred on return to work after a period of absence for treatment of what was until then thought to be acne vulgaris. The absence of comedos is stressed. The lesions showed a strongly inflammatory character and formation of nodules. The patient also complained of subungual pain, which some authors consider typical of fluoric acid action.
W. G. T.

INFANTILE ECZEMA. J. Ingram (1955) *Austral. J. Derm.*, **3**, 5.

Dr. Ingram has avoided speculation in a thoughtful and practical dissertation : his advice on the management of children with this disease is sympathetic, scientific and clear. He is uncompromising on the uselessness of skin-testing, and of antihistamine and antipruritic ointments. Those of us who have tried to do without physical restraints on these scratching children are encouraged to try again. It would be useful if reprints of this paper were made available to all practitioners and nurses who care for eczematous infants. R. E. B.

A NOTE ON THE DETECTION OF CANDIDA ALBICANS. M. M. Morton. (1955) *Austral. J. Derm.*, **3**, 13.

The organism grew satisfactorily at 30–37° C. on a medium composed of agar 2% and peptone 1% in tap water. The pH did not appear to matter much : values of 5, 7, and 9, gave the same results. Aureomycin, 10mg./100 c.c. was useful if the inoculum was grossly contaminated. Further details and references to the literatures are given in the article. R. E. B.

THE INCIDENCE OF SKIN DISEASES IN AUSTRALIA. J. Summons. (1955) *Austral. J. Derm.*, **3**, 15.

An account of the diagnoses of 25,296 private patients seen in Melbourne between 1938 and 1952. Eczema (27%), warts (12%) carcinomas (8%) and seborrhoea (6%), head the list. Eight similar investigations in other countries, from 1878 onwards, are quoted for comparison.

R. E. B.

SKIN CARCINOMA OF THE LOWER EXTREMITY. W. H. Ward. (1955) *Austral. J. Derm.*, **3**, 27.

A report of six cases of squamous carcinoma, all occurring in members of the same family. They had all been fishermen. Heredity, exposure to sunshine, tar and other trauma are suggested as predisposing factors. R. E. B.

REPORT ON A CASE OF LOCALIZED BLASTOMYCOSIS. H. Macmillan. (1955) *Austral. J. Derm.*, **3**, 38.

A clinical photograph demonstrates severe involvement of the face in this 18-year-old white girl, who is believed to be the first reported case in Australia. The diagnosis was made on clinical and histological grounds. The disease seemed to respond best to iodides, but x-rays and much other treatment were also given over about two years.

A charming wedding photograph provides eloquent testimony to a happy medical and social result. R. E. B.

HERPES SIMPLEX. J. A. Dudgeon. (1954) *Med. Pr.*, **232**, 546.

Primary infection with herpes simplex virus is unusual in the first six months of life, but by the age of 5 it has been estimated that the number of children who have been infected—about 60%—approximate to the incidence in the adult population.

Following infection, herpes antibody remains at a high level for an indefinite period. Primary herpes simplex infection can vary from an asymptomatic condition to a fatal generalized illness. Primary infections may arise on some site of trivial trauma and must always be remembered in cases in which vesiculation and pyrexia occur around a small superficial wound.

Infection on areas of eczema is one of the causes of Kaposi's varicelliform eruption.

Recurrent herpes is brought about probably by the high antibody level, and the recurrent lesions are most likely due to a reactivation of latent virus. The view that recurrent stomatitis is due to the herpes simplex virus has not been confirmed.

Laboratory diagnosis is a job for the expert and methods used are microscopy, virus isolation and serology.

As yet, no specific treatment is available. H. R. V.

SEBORRHOEIC CONDITIONS. F. F. Hellier. (1955) *Med. Pr.*, **233**, 433.

Seborrhoeic patients are characterized by their tendency to produce rashes in certain particular sites, especially the flexures, by their lowered resistance to infection and by the frequency with which they suffer from acne vulgaris and rosacea at the appropriate ages.

Treatment of these conditions is dealt with regionally along the generally accepted lines and the two factors, infection and the constitutional make-up of the seborrhoeic individual, must be tackled simultaneously. The dangers of the misuse of antibiotics are stressed, and in general treatment correction of overweight and anaemia are important. There also appears to be no doubt that in this condition psychological stress may precipitate or prolong attacks. H. R. V.